RECLAMATION SAFETY OF DAMS ACT OF 1978

HEARING

BEFORE THE

SUBCOMMITTEE ON WATER AND POWER

OF THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

NINETY-SEVENTH CONGRESS

SECOND SESSION

ON

S. 956

A BILL TO AMEND THE RECLAMATION SAFETY OF DAMS ACT OF 1978 TO AUTHORIZE ADDITIONAL APPROPRIATIONS, AND FOR OTHER PURPOSES

PHOENIX, ARIZ., MARCH 27, 1982

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RECLAMATION SAFETY OF DAMS ACT OF 1978

SATURDAY, MARCH 27, 1982

U.S. SENATE,
SUBCOMMITTEE ON WATER AND POWER,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Phoenix, Ariz.

The subcommittee met, pursuant to notice, at 9:30 a.m., Hon. Frank H. Murkowski, presiding.

Present: Senator Murkowski.

Also present: Russell R. Brown, professional staff member; and Craig Gannett, counsel for the minority.

OPENING STATEMENT OF HON. FRANK H. MURKOWSKI, A U.S. SENATOR FROM THE STATE OF ALASKA

Senator MURKOWSKI. Good morning, ladies and gentlemen.

The hearing before the Subcommittee on Water and Power will now come to order.

As all of you know, the subject of today's hearing is S. 956, a bill sponsored by your Senators DeConcini and Goldwater and Senator Wallop and Senator Cranston to amend the Reclamation Safety of Dams Act of 1978 to authorize additional appropriations, and for other purposes.

Of course, this measure is of vital interest to all the Western States, but I think, particularly, here in Arizona. Since passage of the Reclamation Safety of Dams Act in 1978, the Bureau of Reclamation has completed safety modifications to 2 dams, and work is planned for 11 more dams, and an additional 35 other dams have been identified as needing safety-related work.

However, due to substantial cost escalations and not knowing the extent of the problem when the original act was passed, there is not enough money available to carry out needed safety measures. Enactment of S. 956 would increase the funds available.

Yesterday I was privileged to tour the facilities of the Salt River project and I visited the Theodore Roosevelt Dam and flew over the Stewart Mountain Dam. I was pleased to observe that there is not only water in the area but water coming down from the skies, and this in spite of the fact that my opening remarks had been indicative of the continued exquisite weather for which Phoenix is noted and that my wife looked for yesterday when she went outside. I was very impressed with that visit, and it certainly gave me a better understanding of the significance of the project and what the purpose of this hearing is about

Both the dams have been identified by the Bureau of Reclamation as posing a safety problem in time of severe flooding, a safety problem which could lead to dam failure. This, of course, would be true disaster for the Phoenix metropolitan area. Therefore, I am hopeful that we can secure passage of S. 956 as rapidly as possible. I might add that the House Interior and Insular Affairs Committee has completed action on a companion measure in the House, and prospects look good that we will have a law this year.

I will insert a copy of S. 956 in the hearing record at this point, and the record will be open for 2 weeks for submission of additional materials. There are address labels at the back of the room for those of you who wish to receive a copy of the hearing when it is published. Please fill them out and the staff will collect them after the hearing.

[The text of S. 956 follows:]

97TH CONGRESS
1ST SESSION

S. 956

To amend the Reclamation Safety of Dams Act of 1978 to authorize additional appropriations, and for other purposes.

IN THE SENATE OF THE UNITED STATES

APRIL 9 (legislative day, FEBRUARY 16), 1981

Mr. DECONCINI (for himself, Mr. GOLDWATER, and Mr. WALLOP) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

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A BILL

To amend the Reclamation Safety of Dams Act of 1978 to authorize additional appropriations, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) section 5 of the Reclamation Safety of Dams Act of 1978 is amended by inserting "and for the fiscal year 1982 and ensuing fiscal years, not to exceed $450,000,000," after "$100,000,000,".

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Senator MURKOWSKI. We have a number of witnesses with us today. We have Terry Emerson with Senator Goldwater, Mike Crusa with Senator DeConcini, Lisa Jackson with Congressman Stump. I had breakfast this morning with the Congressman. He had other obligations so he cannot be with us here at this time. All of the statements, of course, will be entered into the record, and we're going to depart a little bit from the agenda in order to accommodate the Governor.

I would certainly like to thank you, Governor Babbitt, for making this conference room available for the use of the subcommittee. The Governor welcomed me to Arizona yesterday, and I enjoyed meeting with him in his office, and I would like to welcome him before the hearing this morning.

I would call very respectfully Governor Babbitt.

STATEMENT OF HON. BRUCE BABBITT, GOVERNOR, STATE OF ARIZONA

Governor BABBITT. Senator, thank you very much. Again, welcome to Arizona. I believe I speak on behalf of every resident of this State in expressing our gratitude to you, not only for displaying such interest in this issue, not only for conducting this hearing here in Phoenix, but for spending the time with us to tour the Salt River project to look at Roosevelt Dam and Stewart Mountain Dam and to display a sense of direct and personal interest that I must say, in my experience, is truly extraordinary, and I believe the people of Arizona owe you a great debt of gratitude for that display of interest.

I would make just several points that I have written testimony about which I will leave for the record with you.

Senator MURKOWSKI. So entered into the record.

Governor BABBITT. I would just make a few points. This issue in Arizona came to our attention in a very dramatic way during the winters of 1978, 1979, and 1980 when this valley was completely beseiged with heavy rains. Very severe flooding caused extensive property damage, and at one point in 1980 we had a nearly catastrophic situation with one tropical storm after another coming up off the Pacific, across California into Arizona, and the Salt River project dams were subjected to stresses that no one had ever dreamed of when they were designed and built, and which they thought would never occur, and which, in fact, had never occurred in the history of the project.

At one point with this stairstep of dams full and nearly topping over, I spent an evening with the mayor in the emergency center here in the valley, and at one point actually went before the cameras and issued a preliminary advisory to a quarter of a million people in this valley, saying it is possible that during the course of this night we will begin evacuation procedures for a quarter of a million people, which was as a result of a possible problem at Stewart Mountain Dam, in which the stress locks might have given way, and the dam could have topped over. It was a close call.

Now I think one is entitled to ask: What is the meaning of all of this? Well, I think it's important to recognize that when the Reclama-

tion Act was passed nearly 100 years ago and the people of such immense vision began to design these systems to literally bring the West alive economically, they were looking at a relatively short history of weather patterns and waterflow in the West. They really didn't have much data to go on, and it led to a series of decisions that we are living with to this day.

The first thing they did was overestimate the average amount of water available in the West, and that, of course, has led to 60 years of warfare on the Colorado River between all of the States. We are slowly learning to sort that out, but it's been very difficult. Ironically, having overestimated the amount of water available on the average, they proceeded to underestimate the amount of water that would descend upon us in any given year. They did not have very much history on which to base those estimates. Whereas we have history going back 400 years as a result of modern science, and we also have the history of the last 3 or 4 years, and we now have come to appreciate the central paradox of the Western deserts. Most of the time it is bone dry. Most of the time we are before you and the rest of the Nation telling you how desperate it is for lack of water.

We also now know that when it comes, it comes with a vengeance, and that has led the Bureau of Reclamation to recalculate the maximum power of storms and to build a series of models to see that the engineering assumptions on which this system was built are fault free, but the outer limits in the models were way too conservative, and that leads us back to the safety of dams. It's a problem that we must address. We have a moral responsibility to stare those facts straight in the eye and to take appropriate action.

Now these are Federal reclamation projects, and it is our contention, our plea to you, that the Federal Government must assist in straightening this problem out, must assist with the capital investment necessary to capitalize on the lessons of recent history. The bill, the proposals, I support 100 percent. I believe that they are a realistic approach to the problem. I would only suggest, Mr. Chairman, that you consider this issue of inflation. Again and again and again in the last few years we have had occasion to look back at reclamation authorizations that were made on the assumption there would be no inflation, sort of a tacit assumption there wouldn't be any problem. The events of recent years have shown us how wrong we are. We are now in a period of low inflation. I don't know whether that will last or not. If it does, we don't have a problem with the fixed authorization, but I would suggest it would be most helpful to have some approach to hedge against the value of the dollar in times that modifications are actually made.

There are many other witnesses here today that have some very helpful perspectives on this problem. I commend them to your attention, and, again, Senator, we are all extremely grateful for the remarkable degree of personal attention you've given this problem, and I only wish we could vote for you in the next election. We'll urge our relatives in Alaska to.

[The prepared statement of Governor Babbitt follows:]

REMARKS OF ARIZONA GOVERNOR BRUCE BABBITT
BEFORE THE SENATE SUB-COMMITTEE ON WATER AND POWER RESOURCES,
COMMITTEE ON ENERGY AND NATURAL RESOURCES
MARCH 27, 1982

CHAIRMAN MURKOWSKI, MEMBERS OF THE SUB-COMMITTEE:

THANK YOU FOR PROVIDING THIS OPPORTUNITY TO DISCUSS SOME CRITICAL ISSUES RELATED TO DAM SAFETY, PARTICULARLY THE NEED TO AMEND THE RECLAMATION SAFETY OF DAMS ACT OF 1978 (P.L. 95-578). I AM PLEASED TO MAKE THESE REMARKS BOTH AS GOVERNOR OF ARIZONA AND AS CHAIRMAN OF THE WESTERN GOVERNORS' POLICY OFFICE, (WESTPO), A REGIONAL ORGANIZATION REPRESENTING THIRTEEN WESTERN STATES ON ENERGY, LAND, AND WATER POLICY QUESTIONS.

THE ISSUE OF DAM SAFETY HAS A VERY REAL AND PERSONAL SIGNIFICANCE FOR ME. DURING MY FIRST TWO YEARS IN OFFICE, CENTRAL ARIZONA EXPERIENCED FOUR MAJOR FLOODS. NO ONE THOUGHT FLOWS OF SUCH MAGNITUDE WERE POSSIBLE. IN LATE FEBRUARY, 1980, WE WERE WITHIN INCHES OF RAIN OF A MAJOR DAM FAILURE AT THE STEWART MOUNTAIN DAM ON THE SALT RIVER. AS WE BEGAN EMERGENCY EVACUATION PROCEDURES, STEWART MOUNTAIN WAS THE ONLY THING STANDING BETWEEN A RAGING RIVER AND THE METROPOLITAN PHOENIX AREA WITH ITS MILLION AND A HALF RESIDENTS.

THE POSSIBILITY OF WIDESPREAD DESTRUCTION OF PROPERTY AND LOSS OF LIFE CAUSED BY UNCONTROLLED FLOODING IS PERHAPS THE ULTIMATE IRONY FOR THOSE OF US WHO LIVE IN THE ARID WEST.

FOR MOST OF THE YEAR, OUR STATES ARE BONE DRY. IT HAS TAKEN ALL OUR EFFORTS TO CAPTURE AND STORE OUR SCARCE WATER SUPPLIES. WITHOUT THE ELABORATE SYSTEM OF DAMS, RESERVOIRS, AND CANALS THAT HAVE BEEN CONSTRUCTED OVER THE LAST CENTURY, MUCH OF THE WEST WOULD HAVE REMAINED A FORBIDDING, HOSTILE FRONTIER. BECAUSE OF THESE INVESTMENTS, THE WESTERN STATES ARE TODAY ON THE LEADING EDGE OF AMERICAN SOCIETY. AREAS THAT WERE ONCE VAST WASTELANDS NOW FEED THE NATION AND MUCH OF THE REST OF THE WORLD. VIBRANT CITIES HAVE ARISEN FROM OUR PLAINS AND DESERTS TO SUPPORT THE MOST RAPIDLY GROWING POPULATIONS IN THE COUNTRY AND NEW INDUSTRIES WHICH ARE TRANSFORMING THE NATION'S ECONOMY.

BUT WE HAVE LEARNED THAT, IF WATER IS THE LIFELINE OF THE WEST, SO IT IS ALSO ONE OF ITS MOST DESTRUCTIVE FORCES, IF NOT PROPERLY MANAGED. IN ARIZONA, WE WERE LUCKY IN 1980. BUT OTHERS HAVE NOT BEEN SO FORTUNATE. SCARCELY FIVE YEARS HAVE PASSED SINCE THE TETON DAM COLLAPSED, UNLEASHING A FURY OF WATER DOWN THE HENRY FORKS VALLEY WHICH CLAIMED NINE LIVES AND DEVASTATED NEARLY A HALF MILLION ACRES IN EASTERN IDAHO.

IT WAS IN THE WAKE OF THAT DISASTER THAT CONGRESS PASSED THE RECLAMATION SAFETY OF DAMS ACT. IN DOING SO, IT RECOGNIZED THE CRITICAL NEED TO CORRECT SAFETY PROBLEMS WHICH HAVE DEVELOPED IN STRUCTURES BUILT UNDER FEDERAL RECLAMATION LAW. TO PROTECT THE PUBLIC FROM UNREASONABLE COSTS, THE ACT SPECIFIED THAT THE SECRETARY OF INTERIOR COULD ONLY AUTHORIZE

EXPENDITURES UNDER THIS PROGRAM FOR DAM REPAIRS NEEDED BECAUSE OF NEW FLOOD FLOW DATA AND/OR IMPROVEMENTS IN THE TECHNOLOGY OF DAM DESIGN. SUBSEQUENT STUDIES BY THE BUREAU OF RECLAMATION HAVE IDENTIFIED 27 DAMS IN 10 STATES WITH SUCH STRUCTURAL DEFICIENCIES.

THE BILL YOU ARE CURRENTLY CONSIDERING, S.956, WOULD HELP ADDRESS THESE CRITICAL SAFETY NEEDS BY INCREASING THE AUTHORIZATION FOR RECLAMATION DAM SAFETY FROM $100 MILLION TO $450 MILLION. EVEN THIS MAY NOT BE ENOUGH. THE BUREAU'S MOST RECENT ESTIMATE PUTS THE COST OF NEEDED REPAIRS TO ALL 27 STRUCTURES AT CLOSE TO $650 MILLION. I WOULD ENCOURAGE YOU TO AUTHORIZE THE FULL AMOUNT NEEDED TO GET THE JOB DONE. WE ARE DEALING HERE WITH MATTERS OF LIFE AND DEATH, AND WE SIMPLY CAN'T GET BY ON THE CHEAP.

I WOULD ALSO URGE YOU TO CONSIDER INCLUDING A CLAUSE IN THE BILL WHICH WOULD TIE THE AMOUNT AUTHORIZED TO SOME MEASURE OF INFLATION. ONE OF THE REASONS WE ARE HERE TODAY IS THAT THE CONGRESS IN 1978 COULD NOT FORESEE THE TREMENDOUS ESCALATION IN COSTS WHICH HAS RAISED THE PRICETAG OF THESE MUCH-NEEDED REPAIRS. INFLATION, WHILE MODERATING, PROMISES TO CONTINUE. SINCE IT WILL BE SOME YEARS BEFORE MUCH OF THE ACTUAL CONSTRUCTION MONEY IS APPROPRIATED, THE SENATE MAY FIND IT APPROPRIATE TO INDEX THE AUTHORIZATION TO ACCOUNT FOR FUTURE PRICE INCREASES. WE MUST BE SURE THAT WHEN THE FUNDS ARE NEEDED, THEY WILL BE THERE.

WE ARE ALL ACUTELY AWARE OF THE NEED TO LIMIT GOVERNMENT EXPENDITURES WITH AN EYE TOWARD BRINGING THE FEDERAL BUDGET DEFICIT BACK UNDER CONTROL. BUT EVEN IN THESE DAYS OF FISCAL AUSTERITY, I WOULD ARGUE THAT DAM SAFETY IS A SOLID - INDEED CRITICAL - INVESTMENT. WE ARE DEALING HERE TODAY WITH AUTHORIZATIONS, MOST OF WHICH WILL TAKE MANY YEARS TO MATURE INTO ACTUAL OUTLAYS. THIS LEGISLATION SHOULD HAVE NO REAL IMPACT ON THE FEDERAL BUDGET DURING THE NEXT TWO FISCAL YEARS. BUT, IT WILL ALLOW US TO BEGIN THE IMPORTANT FIRST-STAGE ENGINEERING AND OTHER PRELIMINARY WORK THAT MUST BE DONE NOW IF WE ARE TO GET ON WITH THE JOB OF IMPROVING DAM SAFETY.

FIFTEEN OF THE DAMS IDENTIFIED AS STRUCTURALLY DEFICIENT BY THE BUREAU OF RECLAMATION ARE LOCATED IN WESTPO STATES. TWO OF THEM ARE ON THE SALT RIVER HERE IN ARIZONA - ROOSEVELT DAM AND STEWART MOUNTAIN DAM. NEW HYDROLOGIC DATA HAS CONFIRMED THAT THE MAXIMUM POSSIBLE FLOW ON THE SALT RIVER IS MUCH HIGHER THAN WAS THOUGHT WHEN THESE DAMS WERE BUILT BETWEEN FIFTY AND SEVENTY-FIVE YEARS AGO. IN THE INTERIM, PHOENIX HAS GROWN TO BECOME THE NINTH LARGEST CITY IN THE NATION. A FAILURE OF EITHER ROOSEVELT OR STEWART MOUNTAIN TODAY WOULD BE NOTHING LESS THAN CATASTROPHIC.

MR. CHAIRMAN, EVENTS IN INDIANA AND OTHER PARTS OF THE COUNTRY THIS WINTER HAVE SERVED AS A VIVID REMINDER FOR WESTERNERS OF THE DANGERS THAT RESULT FROM LOSING CONTROL OF

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OUR WATER RESOURCES. THOSE OF US WHO LIVE IN THE SHADOW OF DAMS WHICH ARE POTENTIALLY UNSAFE HAVE LEARNED, AS ONE ONLY CAN FROM NEAR-CRISIS, WHAT THE REAL RISKS ARE.

ARIZONA WAS SPARED A DAM FAILURE IN 1980. BUT, WE MAY NOT BE SO LUCKY THE NEXT TIME AROUND. IF WE ARE NOT WILLING TO PAY THE PRICE FOR PREVENTION TODAY, WE WILL ALMOST SURELY BEAR THE MUCH GREATER COST OF TRUE DISASTER SOMETIME IN THE FUTURE.

THANK YOU.

Senator MURKOWSKI. That's a fair enough trade, Governor.

I much appreciate your testimony and I think you've highlighted in your short summation of the problem the crux of that problem, and we'll certainly take heed in considering your recommendation. I would concur that these are Federal dams, and, as a consequence, they're certainly the responsibility of the Federal Government.

I'll be looking forward to further testimony throughout the morning, and I would appreciate particular emphasis on the question of safety of the dams, as you've indicated in your testimony, Governor, and, again, we thank you for appearing before the committee, and we look forward to responding to your concern.

Thank you very much and good morning to you.

Our next witness is the honorable mayor; Mayor Hance, we welcome you before the committee this morning, and it is a bright and lovely morning, and we personally want to thank you for the opportunity to meet with you the other evening and with your very fine group of citizens of your grand community. My wife and I felt very much at home, and it was a truly delightful evening.

With that, I would welcome your formal testimony and ask you to proceed.

STATEMENT OF HON. MARGARET T. HANCE, MAYOR, CITY OF PHOENIX, ARIZ.

Mayor HANCE. Thank you, sir.

I would like to echo the Governor's remarks about the personal attention and the amount of time you have spent in our State familiarizing yourself with our problems. It is unusual, and we appreciate it deeply.

Senator MURKOWSKI. My pleasure.

Mayor HANCE. Thank you for providing us with this opportunity to present to you our concerns about the safety of the dams. Phoenix is the ninth largest city in the United States, and by far, the largest city in the path of destruction below Federal dams which have officially been declared unsafe. For the Salt River project system the question is no longer if there are dam safety problems, but how and when they will be repaired and who will pay.

For many years now, I have been an ardent supporter of the central Arizona project. During my four terms as mayor of the city of Phoenix, the city of Phoenix has suffered its worst flooding since the construction of Roosevelt Dam in 1911. Since March 1978, Phoenix has been ravaged by five separate floods. Three of these were declared national disasters. The Corps of Engineers reported that those three floods resulted in the loss of 12 lives and caused over $150 million in direct damages in the metropolitan area. This figure doesn't begin to place a price on the pain and suffering of those affected by the floods.

Fortunately, none of these floods was as great as the 100-year flood, which the corps estimate alone would cause $140 million worth of damage. The corps tells me that their standard project flood could result in nearly $300 million worth of damage.

Gentlemen, the chance of that occurring is not as rare as you might think. This area faces one-half of 1 percent chance each and every year of being gutted by that high flood. I hope you can understand my tre-

mendous anxiety to get the flood control which was promised by Congress in 1968 when the Central Arizona project was authorized.

The Orme Dam was the feature of the Central Arizona project which was designed to prevent those floods. Not only would Orme Dam have prevented the floods, but it would also have allowed for the orderly development of the lands adjacent to the Salt River. The development of this area, known locally as the Rio Salado project, is extremely important to the future of the entire metropolitan area.

In the February 1980 flood, we learned of an even greater potential disaster. Emergency evacuation procedures were initiated in anticipation of the possible failure of Stewart Mountain Dam. The estimated flood peak downtown was a full 30 percent greater than the high standard project flood. The city braced itself for a disaster of unthinkable proportions. I still thank God that the anticipated rains never came and the dam held. This was our closest exposure to the dam safety problem which was ultimately going to play a deciding role in the outcome of the Orme Dam alternative study then under progress.

At the onset of that study, Orme Dam was deemed to be the best economic and engineering solution for regulatory storage and flood control, but with the addition of safety of dams concerns, Orme no longer had the decided advantage. On October 3, 1981, I along with 18 other members of the Governor's Advisory Committee on the Orme Dam alternative study endorsed a plan which called for a new or modified Roosevelt Dam on the Salt River, a new dam called Cliff on the Verde River and the New Waddell Dam on the Agua Fria River. Cliff and Roosevelt were designed as multipurpose structures to provide regulatory storage, flood control and dam safety. Waddell was to provide regulatory storage.

I want to point this out because it's important for you to clearly understand the interrerlationships between the Central Arizona project, with its much needed flood control and water supply features, and the safety and dams program with its equally important repairs of unsafe structures.

The Bureau of Reclamation is to be congratulated for combining these separate Federal programs into a single multipurpose plan. The savings have been substantial, and it is estimated that the safety of dams costs under this multipurpose plan would be $210 million, while they would have exceeded $370 million under a single purpose program. This savings of $160 million to the safety of dams program will be paid for by those users of the Central Arizona project who will benefit from the reimbursable benefits of these multipurpose structures.

If you understand that sentence, Senator, you're wiser than I was. It took a cast of thousands, but it happens to be true.

These cost savings have not been achieved without a price of their own. The price has been delays in the Central Arizona project to allow for the incorporation of safety of dams features. Orme Dam, which was scheduled for completion in 1986, has been replaced with a three-dam system which, I am told, will not be completed before 1990. Those delays will cost this area dearly in reduced efficiency of the Central Arizona project and prolonged flood risks.

I now feel that it is Congress turn to act. If these potential savings are to be realized, adequate safety of dams funding must be made

available to allow for the timely implementation of the recommended plan.

Although I understand and fully appreciate your budgetary concerns, budgets are always a setting of priorities. As the chief elected representative of over 800,000 people, I am asking for your support of the safety of dams' portion of this multipurpose project.

Gentlemen, the safety and welfare of the citizens of Phoenix depend upon your support.

I know, Senator, that on occassions like this elected officials are sometimes accused of using oratory and rhetoric that is not always factual in nature, but I happen to have flown over the rivers during the floods, and I've seen buildings moved; I've seen the destruction of several bridges; I've talked to the people who are suffering from lost wages because of their inability to get to work; I've been part of a transportation problem funneling 400,000 cars across 2 bridges as opposed to 400. I know much of the pain and suffering caused by this problem, and I again thank you for the opportunity to share our concerns.

Senator MURKOWSKI. Thank you, Mayor Hance. I very much appreciate your testimony. I think you've also strengthened the statements of our previous witness, the Governor, with regard to a strong opinion as to who is responsible. I'll certainly take that back to the full committee.

I noted a reference to one-half of 1 percent chance each and every year thereafter of being flooded, and I wondered with your small staff how you'd been able to do the extensive research to come up with that kind of odds figure or I wonder was that Jimmy the Greek?

Mayor HANCE. Combined staffs' conclusion.

Senator MURKOWSKI. I see. So there is a good deal of expertise behind that one—that one-half of 1 percent likelihood. It's certainly a figure no one can challenge very well because of the experts.

We certainly thank you, Mayor Hance. I think you've expressed the concern of your constituency with regard to this extremely important—and probably the single most important exposure that the residents of this valley have and your city certainly has, and I share your concern.

I certainly feel an obligation with regard to the safety and the hazards presented by these dams, and we'll be looking forward to specific testimony in your area throughout the morning.

I would like to apologize both to you and to the Governor on behalf of the media. We did start the hearing on time, and they appeared to assume that we wouldn't, so for that reason my apologies, but——

Mayor HANCE. No apology is necessary. Our exposure to the media is rather consistent.

Senator MURKOWSKI. I understand. Thank you very much, Mayor.

We will proceed with the record.

Mr. Frank Welsh. I'm not going to call on him yet, but I'm going to go through my opening remarks, because if I don't my colleague, Mr. Russ Brown, on my right would take me to task.

I should introduce, I think, the table. On my left is Craig Gannett. Craig is with the minority staff from Washington, and Russ Brown

is with the majority staff. He's been with the staff for some—how many years?

Mr. BROWN. Fourteen years.

Senator MURKOWSKI. Fourteen years and has always been majority. How he's managed that I don't know. He doesn't tell me all his tricks. At any rate we'll proceed.

We have witnesses in addition to those that I've already acknowledged, Mr. Frank Welsh and Ms. Carolina Butler, who will testify. It's my understanding that your names were received too late to put on the witness list, which, it says here, was typed in Washintgon D.C., but I know it was typed either late last night or this morning. The subcommittee will be pleased to hear from you when we complete the written list.

We also have a statement from Congressman Rudd, which I will have placed in the record.

[The prepared statement of Congressman Rudd follows:]

Statement of
Honorable Eldon Rudd
Subcommittee on Water and Power
United States Senate
March 27, 1982

Mr. Chairman, I wich to take this opportunity to record my support for the bill which you are considering, S. 956. I am a cosponsor of the House version of the bill.

This bill would increase the amount of funds authorized under the Reclamatior Safety of Dams Act established in 1978. This is necessary because there are several dams which are in dire need of rehabilitation, including Roosevelt and Stewart Mountain Dams, and most of the money authorized in the priginal bill has already been committed.

Mr. Chairman, no single resource has been as vital to the welfare and progress of man as water, particularly in the United States. No other Nation has developed and managed its water resources with such energy and imagination. In the arid Southwest, we use water, reuse it, and use it again, until all that's left is literally dust.

But, from time to time, the full force of this valuable resource unchecked and uncontrolled, has been responsible for death and destruction.

The two dams identified in this State that need rehabilitation are an integral part of the water system and flood control for Arizona. They are not new dams. In fact, they are structures that date back to the early days of the Bureau of Reclamation.

I urge this Committee to support passage of this much needed legislation. Thank you.

Senator MURKOWSKI. Now to get back to the regular order of business.

Your first witness this morning will be Terry Emerson, who will be making a statement on behalf of Senator Goldwater and Mike Crusa, who will be making a statement on behalf of Senator DeConcini, and Lisa Jackson, who will be making a statement on behalf of Congressman Stump, and since we only have two chairs at the table—I think the instructions were that we were going to ask them to join us, but I'm going to turn this part over to my colleague and ask you to straighten that out.

Mr. BROWN. Thank you very much, Senator.

Senator MURKOWSKI. Terry, if you'd like to come forward first and present a statement on behalf of Senator Goldwater, and then, of course, we'd like you to come join us here. We don't have a chair here for you. You notice that.

STATEMENT OF HON. BARRY GOLDWATER, A U.S. SENATOR FROM THE STATE OF ARIZONA, AS PRESENTED BY TERRY EMERSON, LEGISLATIVE ASSISTANT

Mr. EMERSON. Mr. Chairman, I'm Terry Emerson, legislative assistant to Senator Barry Goldwater, and on behalf of Senator Goldwater I join the many others who will welcome you to Phoenix and to the State of Arizona. We do deeply appreciate your decision to hold a field hearing here in our State on what is truly a life or death matter of dam safety. Senator Goldwater has joined with Senator DeConcini in sponsoring the bill S. 956, which is the subject of today's hearing.

Unfortunately, the potential catastrophe you are hearing about that could result from overtopping of the dams on the Verde and the Salt Rivers is not theory. It is all too real, and it almost occurred here in the valley 2 years ago, and I would like to point out another aspect of this problem. That is that the dam safety not only affects approximately 500,000 residents of Metropolitan Phoenix, but many, many thousands of persons who live in communities and on productive farmlands of western Arizona are put into indirect peril by the same disasters that haunt this valley, plus the fact that the Salt River can cause flooding in the Gila River as well, leaving a swath of ruined homes and farms approximately 200 miles long all the way to Yuma, Ariz., at the border of California on the Colorado River.

In fact, Mr. Chairman, I just spent some time at Yuma earlier this week, and I met with many of the growers there, and they told me of their concern about dam safety in this area. They told me of their strong support of the bill that you're hearing concerns about. These growers informed me that 2 years ago Yuma lost 5,000 acres of valuable farmland when floods here forced dams on the Gila River to release extremely heavy amounts of water into the valleys of western Arizona, and they advised me that the potential loss from a major flood in this area would be roughly 85,000 acres in the Welton-Mohawk district and Yuma and the other agricultural valleys of Western Arizona.

Mr. Chairman, the Federal Government retains title to the dams on the Salt and Verde Rivers. The Federal Government bears the re-

sponsibility for the monumental damages that could result from a disaster caused by design flaws in dams built according to Federal standards. Therefore, the Federal Government should bear the responsibility for funding the dam safety corrections authorized by the Dam Safety Act of 1978 on a nonreimbursable basis.

Mr. Chairman, that concludes my statement on behalf of Senator Goldwater.

Chairman MURKOWSKI. Thank you very much, Mr. Emerson. We appreciate that statement, and it will be noted in the record in full as presented.

You are certainly welcome to join us at the table at this time.

Our next witness will be Mr. Mike Crusa.

Mike, on behalf of Senator DeConcini we welcome you and look forward to the testimony of the Senator.

STATEMENT OF HON. DENNIS DeCONCINI, A U.S. SENATOR FROM THE STATE OF ARIZONA, AS PRESENTED BY MIKE CRUSA

Mr. CRUSA. Thank you very much, Mr. Chairman.

I want to extend a very personal thank you to you and your staff for the courtesy you've extended to the Senator's staff here. The Senator regrets he's not able to be here personally, but he wanted this statement to be entered into the record on his behalf.

Senator MURKOWSKI. Well, we welcome the statement by Senator DeConcini.

Mr. CRUSA. Mr. Chairman, I would like, first of all, to extend a very warm welcome to Arizona, to you and your staff, and to invite you to become familiar with our great resources, our climate, our deserts, our mountains, our monuments, but most of all our people. The State may be small by Alaska's standards, but we like to think that it offers almost as much variety.

I would also like to personally thank you for conducting hearings here in Phoenix on S. 956, the bill I introduced, which increases the authorization for the Bureau's safety of dams programs. I am sure the cosponsors of the legislation, my senior colleague, Senator Barry Goldwater, Senator Malcolm Wallop of Wyoming, and Senator Alan Cranston of California, appreciate as I do, the time and effort the committee is making to fully consider and investigate what we have found to be conditions that demand urgent attention.

The purpose of the bill is to allow the Bureau of Reclamation sufficient authorization to complete safety work in reclamation dams not only in Arizona, but nationwide.

I hope you will get a chance while you are here to tour and become acquainted with various reclamation projects throughout the State. They have been made possible through cooperative efforts between the Bureau of Reclamation and State, local, and private interests.

You will agree with me, I'm sure, that a careful development of our land and water resources has been an investment, a very prudent investment, in the future of this country. The cost/benefit ratios do not include the indirect and long-term benefits that have accrued in the nature of employment, agricultural production, electrical power, recreation, and generally, a healthier economy through the years. This

has not been accomplished overnight. Construction of Theodore Roosevelt Dam began in 1905 and was completed in 1911.

Most of the other dams on the Salt River were constructed in the 1920's. The process continues today, of course, with the construction of the Central Arizona project. This cooperative effort continues, Mr. Chairman, solely because it works. It is beneficial to the region and to the country. The dams and other project features still stand and still provide invaluable benefits to millions of people.

The thing we have to remember, however, is that these dams are 50 to 75 years old. The natural aging process can change, and perhaps weaken the structures and, alone, that could justify restoration or modification, but added to this is new information that with years of experience and study includes a much better understanding of the watershed and its potential for flooding. There will be given to the committee, I'm sure, a sufficient amount of expert testimony in technical terms of inflow design and discharge capacity, but the knowledge is not all academic. We have had some firsthand observations of the awesome potential of these rivers, the latest lesson coming just 2 years ago. There will also be expert testimony concerning the possible results of the failure of one of these structures, but there is no one who has witnessed the savage destruction of the Salt River that doubts that dam failure is possible or that the result would be anything less than catastrophic.

There are those who might look at the dollar amounts and say that dam safety costs too much, but the dollars that might eventually be appropriated as a result of this act will not begin to match the benefits already realized and the benefits which will continue to accrue through the next 50 years, and certainly, no one could suggest that even one life, let alone thousands of lives and, perhaps billions of dollars of damage to public and private property, would not be worth the investment in safety.

As to the specific language of the bill, the authorization level we included is based on estimates provided by the Bureau last year and present estimates provided—present estimates of safety requirements nationally may have to be reviewed.

Again, Mr. Chairman, I commend you for making the effort to become personally acquainted with the very critical problems we of the region have and to listen to the people who live in the shadow of the reclamation dams. The expertise is here.

I greatly regret not being able to be here personally, but I and my colleagues stand ready to assist in any way possible to expedite and pass the legislation this year.

Senator MURKOWSKI. Thank you very much. We appreciate that statement on behalf of Senator DeConcini, and it will be noted in the record as read in full.

Mr. CRUSA. Thank you, Mr. Chairman.

Senator MURKOWSKI. Our next witness represents Congressman Stump, Lisa Jackson.

Good morning, Lisa. We welcome you, and, as a witness, look forward to your testimony on behalf of Congressman Stump.

Ms. JACKSON. Thank you, Mr. Chairman. I apologize from Congressman Stump that he couldn't be with us.

Senator MURKOWSKI. I met him earlier, and we had a nice breakfast.

STATEMENT OF HON. BOB STUMP, A U.S. REPRESENTATIVE FROM THE STATE OF ARIZONA, AS PRESENTED BY LISA JACKSON, ADMINISTRATIVE ASSISTANT

Ms. JACKSON. My name is Lisa Jackson, administrative assistant to Bob Stump. I'd like to submit the Congressman's testimony for your hearing proceedings.

Senator MURKOWSKI. It will be so noted and accepted. Thank you.

Ms. JACKSON. House bill S. 956, as previously stated, has been considered by the House Interior Committee, and Congressman Stump is continuing support of dam safety legislation, based on the extensive damage suffered in his congressional district and on his realization of the need to reduce flood impact.

Again, Mr. Chairman, we'd like to thank you for your personal attention and action in a matter so vital to our State.

[The prepared statement of Congressman Stump follows:]

STATEMENT OF REPRESENTATIVE BOB STUMP

PRESENTED IN FIELD HEARINGS TO THE

SENATE ENERGY SUBCOMMITTEE ON WATER AND POWER

PHOENIX, ARIZONA

March 27, 1982

Mr Chairman:

As a cosponsor of the House companion bill to S. 956, I would like to thank you for your interest and efforts in holding the hearings today.

Dam safety, in my opinion, requires our immediate attention. I support the dam safety legislation because it will result in increased water storage capacity which Arizona needs as well as reduce the flood flow impacts.

It is my understanding that the Bureau has recommended remedial repairs at some 27 existing structures, including two located upstream from the Phoenix metropolitan area. Specifically, the Bureau believes that additional spillway capacity should be installed at the Theodore Roosevelt Dam and the Stewart Mountain Dam on the Salt River in order to safely manage flood flows likely to occur in that area.

Such protection, I believe, is a necessary and legitimate function of the federal government. We need supplemental additional flood protection for the valley. Floods we have recently experienced in Arizona did substantial damage. In my district Holly Acres and Hound Dog Acres were seriously damaged in 1978. Again this year, we have seen the effects of flooding - loss of life, property damage, traffic jams, lost work time.

Nationwide, floods have killed hundreds of thousands and caused billions of dollars in property loss. Indeed, more than 75% of all Presidential Disaster Declarations are related to floods. Dams properly designed and

reservoirs prudently managed provide a powerful tool in protecting against the havoc of flooding.

People basically consider warnings of any kind as merely a piece of the information puzzle they are faced with in times of danger. I suspect that if people cannot confirm a danger, they tend not to react.

It seems to me that the Department of the Interior, in endorsing S. 956, shares the signal being sent by the Bureau, that many of its structures need to be repaired. I believe we ought to heed that warning.

* * *

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Senator MURKOWSKI. We appreciate that statement on behalf of the Congressman and wish you a good day.

Our next statement will be by Mr. Reid Teeples, the associate general manager, Salt River project, Phoenix, Ariz., accompanied by Mr. Michael Rappoport, director, Government Relations.

Gentlemen, we wish you a good morning and look forward to your testimony.

STATEMENT OF REID W. TEEPLES, ASSOCIATE GENERAL MANAGER FOR WATER, SALT RIVER PROJECT, ACCOMPANIED BY D. MICHAEL RAPPOPORT, DIRECTOR, GOVERNMENT RELATIONS

Mr. TEEPLES At this time we would like our statement to be included in full in the record. We'd like to just summarize in the interest of time here this morning by showing you some photographs and charts, after which we would be glad to answer any questions you may have.

Senator MURKOWSKI. Thank you. Your testimony will be so noted in the record.

You may proceed.

Mr. TEEPLES. I think I could probably skip some of my testimony here describing the Salt River project since you did fly over it yesterday, and I will move along to some other pertinent facts.

By way of background, the project was organized as a territorial corporation to secure a $10,166,021 loan from the Federal Government for construction of the Roosevelt Storage Dam. The collateral was in the form of individual land ownership, and the loan was repaid in full in October 1955. Operations was turned over from the then Reclamation Service to the project in 1917. Five more dams were subsequently added. Three included hydroelectric facilities. The United States does, however, retain a paramount right in the project which arises from the original construction, operation, and subsequent contractual arrangements pursuant to reclamation law.

Mr. Chairman, at the outset we want to express our appreciation for this opportunity to testify in support of this bill, S. 956.

Following the Teton Dam failure in Idaho in 1976 and the collapse of the Kelly Barnes Dam near Toccoa, Ga., in 1977, this committee and the 95th Congress provided a new and needed extension of Federal dam safety policy with the enactment of Public Law 95–578.

The National Dam Inspection Act, which became law in the aftermath of the Buffalo Creek disaster in 1972, directed the Secretary of the Army to inventory and inspect all Federal and non-Federal dams in the United States. In 1981 the Corps of Engineers reported that of some 67,000 dams in the United States, 21,000 are classified as high hazard. This classification generally refers to a dam located upstream from a major metropolitan area. To date, 2,917 dams have been evaluated as unsafe.

Others testified that the Bureau of Reclamation has identified 27 dams, including 2 on the Salt River, that also require safety modifications. Our testimony will address these structures.

For purposes of orientation we will show by exhibit 1 where the Salt River begins high in the White Mountains east of Phoenix and meets Tonto Creek where Roosevelt Dam and Reservoir were built by the Reclamation Service, where it flows through the Salt River Canyon

into Horse Mesa, Mormon Flat and Stewart Mountain Dams, then joins the Verde River, and then runs through the Phoenix metropolitan area and into the Gila River, which we've mentioned.

The Verde River is fed by streams and tributaries to the west and flows through the Horseshoe and Bartlett Dams, joining the Salt River some 36 miles above the Phoenix metropolitan area, which represents a population center of approximately 1.2 million people, perhaps 1½ million people.

The next exhibit will give you an idea of the mountainous watershed, which is approximately 13,000 square miles in size and that drains into the Salt and Verde Rivers, and this area of the State averages about 20 inches of precipitation. On the surface this amount may not appear to be ominous or unmanageable, but when one-half of that falls within 5 days, it's an experience not soon to be forgotten.

Our Governor and our mayor have already explained to you, for example that in 1980 we began with an unusually wet January. The watershed was saturated and the reservoirs filled to approximately 90 percent of capacity, which is the capacity that they are today. In February four storms swept out of the Pacific, pounding the west coast and flooding large areas inland. The first of these required record releases from Salt River project dams and reservoirs, but before the floodwaters subsided, a second and a third occurred. As the Governor mentioned, meanwhile, slow, steady warm rain rapidly melted the snowpack on the watershed.

These photographs you're going to see can better tell you what the Salt River system looked like at that time. I can assure you that the photographs are real. I was in the helicopter and saw the sites firsthand in 1978, 1979, and 1980.

This is Horseshoe Dam. Horseshoe Dam is located about 58 miles northeast of Phoenix, and it was constructed between 1944 and 1946. It's 144 feet in height, 1,500 feet in length, and has a capacity of 139,238 acre-feet. Now this is a picture of the spillway. This spillway can discharge up to a capacity of 250,000 cubic feet per second.

This is an earth-filled dam. The low dam is located over to the right off the picture, and so any overtopping of this dam will certainly provide a real catastrophe, being an earth-filled dam.

The next photograph is the Bartlett Dam, and it's located downstream from Horseshoe Dam about 48 miles northeast of Phoenix. It was constructed between 1936 and 1939. It's 283 feet in height, 800 feet in length. It's a multiple arch concrete dam with a capacity of 178,185 acre-feet. You can see the spillway discharging the huge quantities of water during the storm.

The next exhibit is the Theodore Roosevelt Dam, which you saw yesterday. It was constructed between 1905 and 1911. It's located 80 miles east of Phoenix. It's 280 feet high, 723 feet in length, and has a capacity of 1,381,580 acre-feet.

The next dam below Roosevelt is Horse Mesa Dam, which you flew over. It's located 65 miles east of Phoenix, and it was constructed between 1914 and 1927. It's a concrete dam. It's 300 feet high and 660 feet in length and has a capacity of 245,138 acre-feet.

The next picture is the Mormon Flat Dam, the second dam below Roosevelt, located 51 miles east of Phoenix, and it was constructed be-

tween 1923 and 1925. It's 224 feet high, 380 feet in length, with a capacity of 57,582 acre-feet.

You can see the water discharging through the spillway. Not too much passing through that spillway at that point when the picture was taken.

The next exhibit is Stewart Mountain Dam, the last dam on the Salt River. Stewart Mountain Dam is one of the dams that's been declared unsafe by the Bureau of Reclamation and needs repairs. It's located just 41 miles east of Phoenix, and it was constructed between 1928 and 1930. It's 207 feet high. It's a concrete arch dam. It's 1,260 feet in length and has a capacity of 69,765 acre-feet.

The next exhibit shows a composite of discharges of 107,000 cubic feet per second on the Verde and about 75,000 cubic feet per second on the Salt, plus these additional facts riveted our attention on the dam safety issue in February 1980, referred to by the Governor and by the mayor.

First, the 160,000 cubic feet per second inflow into a nearly full Roosevelt Reservoir was expected to exceed 214,000 cubic feet per second, and there was concern that if the reservoir continued to fill at the rat of 1 foot per hour from the inflow, the lake would submerge both access bridges to the dam and wash them into the spillway gates. Among other things, this would have reduced the discharge capacity of the gates.

Mr. Chairman, overtopping at the Roosevelt Dam was a near reality 2 years ago, as described previously.

The second, the continued and cumulative effects of the February storms caused major damage at most of the dams on the Salt, including significant scouring at Stewart Mountain some 40 miles above the Phoenix metropolitan area. There was damage done to the spillway. Mr. Brown was out here during that period and saw the damage firsthand. The scouring at Stewart Mountain Dam was significant, and we were much concerned at the time with that dam as the Governor mentioned.

There was still another storm that was identified by the National Weather Service heading toward Arizona. During this period of time the precipitation was estimated to add 2 more inches to the watershed, and as the city traffic backed up, as the major just described to you, to cross the only 2 serviceable bridges over the Salt River, 10 other crossings having been flooded, Gov. Bruce Babbitt announced the possibility of a dam failure at Stewart Mountain.

Inundation areas were mapped, evacuation routes announced, and emergency shelters established. We met at the time with the Governor at an emergency center over in Papago Park with all of the National Guard, and we got things prepared for the worst. Fortunately, the weather pattern shifted and the storm failed to materialize, so we know that storms of high magnitude can come to Arizona even though it's a semiarid region. I guess that's why it's called semiarid. The water comes in large amounts or it doesn't come at all.

Now I'd like to briefly discuss the anatomy of the dam failure as the experts on our staff and on other staffs look at this system of dams.

The February experience gave real meaning to the so-called inflow design flood, and that is, the largest flood likely to bring water into a system of dams and reservoirs. As designed by the Bureau, modern

dams are designed to safely pass the inflow design flood. Indeed, Federal standards today require high hazard dams to safely manage the inflow design flood, and, simply stated, overtopping will occur if more water flows into a reservoir than the dam can contain or pass through gates and spillways. Sustained overtopping will scour or erode the foundation causing uncontrolled seepage, openings in the dam face, and even shearing of the abutments which hold the structure in place. At the same time hydrostatic pressure behind the dam increases the force working against the dam mass and foundation. At some point this combination of circumstances can result in extensive structural deterioration causing the dam to rupture or disintegrate entirely.

Should such ever be the case on the Salt River, the cascading effect downstream would be catastrophic.

Mr. Chairman, no one can predict circumstances, certainly, that will precipitate this sequence of events. However, the Bureau of Reclamation, the Corps of Engineers, the Salt River project, and others are agreed that an inflow design flood at least twice, perhaps, three times as great as originally thought possible might well occur in Arizona. Of course, we're concerned about floods that are not near the magnitudes of the inflow design flood, and they must be matched.

The Reclamation Safety of Dams Act provides in pertinent part in section 4(b) that the costs heretofore or hereafter incurred in the modification of structures under this act, the cause of which results from new hydrologic or seismic data or changes in state-of-the-art criteria deemed necessary for safety purposes shall be nonreimbursable and nonreturnable under the Federal reclamation law.

Roosevelt Dam was designed at the turn of the century by Arthur Powell Davis of the Geological Survey using 25 years of rainfall records, and Davis estimated in his report to the Secretary of the Interior that, "the maximum flood wave possible at the Salt River Reservoir; that is, Roosevelt Dam, is 220,000 cubic feet per second." Some years later the Bureau recalculated the inflow design flood for Roosevelt to include a peak flow of 214,000 cubic feet per second, a duration of 8 days and an inflow of 1 million-plus acre-feet, but after the events of 1980, using 100 years of actual rainfall and runoff, the Bureau of Reclamation defined the inflow design flood for Roosevelt as a peak flow of 678,000 cubic feet per second and a duration of 15 days and an inflow of 2.5 million acre-feet.

Now this dramatic increase is due, in part, to an expanded data base. The new inflow design flood was also developed in large measure by the application of some very sophisticated data arrived at by some very sophisticated computer techniques. For example, the most severe storms of record are identified, maximum precipitation projected, effects on the watershed simulated, and runoff routed through existing or proposed containment and spillway structures. This is clearly a quantum leap from the rudimentary state of the art available at the turn of the century. The significance of this is that the Bureau now recommends additional spillway capacity and surcharge at Roosevelt; that is, a reservoir capacity located above the spillway gates and below the top of the dam, to safely manage the inflow design flood.

Although prediction is no substitute for prevention, this additional storage room may well represent the difference between prudent planning and catastrophe on the Salt system.

In conclusion, we submit that the design and construction of Roosevelt Dam more than three-quarters of a century ago provides a textbook example of the change in the state of the art contemplated when this committee wrote the Reclamation Safety of Dams Act, but we are troubled by the administration's recommendation to revoke the longstanding reclamation policy of nonreimbursability for dam safety purposes. It seems to us to be highly inappropriate for the Government to declare design flaws in Federal structures based on Federal criteria, and then require a Federal solution funded through the repayment formula proposed today.

In most cases the loans that financed the structures have already been paid back with interest. It is simply wrong to require us to pay for the dams again. We urge the committee to reject the administration's amendment to rewrite section 4 of the act.

Enactment of Senate bill 956 will permit the Bureau to develop and implement prudent measures for structures located in States that have already suffered loss of life and property due to dam failures. In our opinion, approval of the bill S. 956 will restore confidence in those who have designed the dams and in the governmental institutions where the final responsibility for the public safety rests.

Thank you. We will be pleased to answer any questions that you may have.

[The prepared statement of Mr. Teeples follows:]

SALT RIVER PROJECT STATEMENT
PRESENTED TO THE
U.S. SENATE ENERGY & NATURAL RESOURCES
WATER AND POWER SUBCOMMITTEE
March 27, 1982

Introduction

Mr. Chairman, I am Reid Teeples, Assistant General Manager for Water, Salt River Project. Accompanying me is Mike Rappoport, Director of Government Relations.

At this time, I respectfully request that our statement be included in full in the record and that we be permitted to summarize using a series of photographs and charts (attached hereto) after which we will attempt to respond to any questions you or the members of the Committee may have.

The Salt River Project was authorized on March 14, 1903, and is comprised of the Salt River Valley Water Users Association and the Salt River Project Agricultural Improvement District.

The District, a political subdivision of the State, provides electricity to approximately 345,000 residential, commercial, industrial and agricultural power users in Maricopa, Gila and Pinal Counties.

The Association, an Arizona corporation, is responsible for the administration of the water supply and water rights of the waterusers and operates and maintains the system that provides water for agricultural, domestic and industrial uses in the Project's 250,000 acre service area. In addition,

the Project supplies water for municipal purposes to the eight central Arizona cities and towns of Chandler, Gilbert, Glendale, Mesa, Peoria, Phoenix, Scottsdale and Tempe.

By way of background, the Association was organized as a Territorial Corporation to secure a $10,166,021 loan from the federal government for construction of the Roosevelt Storage Dam and power plant, Granite Reef Diversion Dam and to improve the condition of existing delivery canals. Collateral for the loan was in the form of individual land ownership. The loan was repaid in full in October, 1955.

Operation of the facilities was turned over from the then Reclamation Service to the Association in 1917. Subsequently, five more dams were added with Reclamation approval, three of which included hydroelectric facilities. Financing was achieved by selling corporate bonds, again using land within the Project as collateral.

The United States does, however, retain a paramount right in the Project which arises from the original construction, operation and subsequent contractual arrangements pursuant to Reclamation Law.

Federal Dam Safety Policy

Mr. Chairman, at the outset we want to express our appreciation for this opportunity to testify in support of S. 956, a bill to increase to $450 million the $100 million

authorization established by the Reclamation Safety of Dams Act of 1978 (P.L. 95-578). Following the Teton Dam failure in Idaho in 1976, and the collapse of the Kelly Barnes Dam near Toccoa, Georgia in 1977, this Committee and the 95th Congress, provided a new and needed extension of federal dam safety policy with enactment of P.L. 95-578.

As the Committee is aware, the National Dam Inspection Act of 1972 (P.L. 92-367) became law in the aftermath of the Buffalo Creek disaster of 1972. Among other things, it directed the Secretary of the Army to inventory and inspect all federal and non-federal dams in the United States.

In 1981, the Corps of Engineers reported that of some 67,000 dams in the United States, 21,000 are classified as "high hazard." A "high hazard" dam is generally defined as a structure located upstream from a major metropolitan area. To date, 2,917 or approximately 33% have been evaluated as unsafe.

Others have testified that investigations by the Bureau of Reclamation have identified 27 dams within the jurisdiction of this Committee, including two on the Salt River in Arizona, requiring safety modifications. Our testimony will address these Bureau structures.

For purposes of orientation, I would respectfully refer the Committee to the following illustrations:

Attachment I. The Salt River begins high in the White Mountains east of Phoenix, meets Tonto Creek where Theodore Roosevelt Dam and reservoir were built by the Reclamation Service, flows through

the Salt River Canyon into Horse Mesa, Mormon Flat and Stewart Mountain Dams, joins the Verde River, then runs through the Phoenix metropolitan area and into the Gila.

The Verde River is fed by streams and tributaries to the west and flows through the Horseshoe and Bartlett Dams, joining the Salt some 36 miles above the Phoenix metropolitan area.

Please note that this metropolitan area represents a population center of approximately 1.2 million in the cities of Phoenix, Scottsdale, Glendale, Peoria, Sun City, Tempe, Mesa, and other close-by suburbs.

Attachment II. The Salt and Verde Rivers are fed by a mountainous watershed approximately 13,000 square miles in size. This area of the state averages about 20 inches of precipitation in most years. To the uninitiated, this amount may not appear to be ominous or unmanageable, but when half of that falls within five days, it's an experience not soon forgotten.

For example, 1980 began with an unusually wet January which saturated the watershed and filled the reservoirs to approximately 90% of capacity. Then, between February 13th and February 21st, six storms swept out of the Pacific, pounding the west coast and flooding large areas inland. The first of these storms required record releases from Salt River Project Dams and reservoirs. But before the floodwaters subsided, another storm occurred. Meanwhile, slow, steady, warm rain rapidly melted the snowpack on the watershed, washing over the already saturated soil and flowing into surging streams.

The following photographs can better tell what the Salt River system looked like at that time.

Attachment III. Horseshoe Dam, 58 miles northeast of Phoenix, constructed betwen 1944-1946, is 144 feet in height, 1,500 feet in length, and has a capacity of 139,238 acre feet (Horseshoe Lake).

Attachment IV. Bartlett Dam, 48 miles northeast of Phoenix, constructed between 1936-1939, is 283 feet in height, 800 feet in length, with a capacity of 178,185 acre feet (Bartlett Lake).

Attachment V. Theodore Roosevelt Dam, 80 miles east of Phoenix, constructed between 1905-1911, is 280 feet in height, 723 feet in length, and has a capacity of 1,381,580 acre feet (Roosevelt Lake).

Attachment VI. Horse Mesa Dam, 65 miles east of Phoenix, constructed between 1924-1927, is 300 feet in height, 660 feet in length, and has a capacity of 245,138 acre feet (Apache Lake).

Attachment VII. Mormon Flat Dam, 51 miles east of Phoenix, constructed between 1923-1925, is 224 feet in height, 380 feet in length, with a capacity of 57,582 acre feet (Canyon Lake).

Attachment VIII. Stewart Mountain Dam, 41 miles east of Phoenix, constructed between 1928-1930, is 207 feet in height, 1,260 feet in length, and has a capacity of 69,765 acre feet (Saguaro Lake).

Attachment IX. Composite illustration of the Salt River Project System.

The dam safety issue was put into sharpest relief in late February, 1980, by these additional facts:

First, the inflow into a nearly full Roosevelt Reservoir was 160,000 cubic feet per second (cfs) and expected to exceed 214,000 cfs. There was concern that if the reservoir continued to fill at about one foot per hour from the inflow, the lake would submerge both access bridges to the dam and wash them into the spillway gates. This would have significantly reduced the discharge capacity of the gates. Mr. Chairman, overtopping at the Roosevelt Dam was a near reality two years ago next month.

Second, the continued and cumulative effects of the February storms caused substantial damage to all dams on the Salt including significant scouring at Stewart Mountain, located some forty miles above the Phoenix metropolitan area.

Third, still another storm was identified by the National Weather Service heading toward Arizona, with precipitation estimated to add two more inches to the watershed. As city traffic backed-up to cross the only two serviceable bridges over the Salt River, ten other crossings having been flooded, Governor Bruce Babbitt announced the possibility of a dam failure at Stewart Mountain.

Inundation areas were mapped, evacuation routes announced and emergency shelters established. Fortunately, the weather pattern shifted and that storm failed to materialize.

The Anatomy of a Dam Failure

That February experience gave real meaning to the so-called inflow design flood (IDF), that is, the largest flood likely to

bring water into a system of dams and reservoirs. It is important to note here that modern dams are designed to safely pass IDF. Indeed, federal standards today require "high hazard" dams to safely manage the inflow design flood. Simply stated, overtopping will occur if more water flows into a reservoir than the dam can safely contain or pass through its gates, valves and spillways.

Sustained overtopping will scour or erode the foundation causing uncontrolled seepage, openings in the dam face and/or shearing of the abutments which hold the structure in place.

At the same time, hydrostatic pressure behind the dam increases the force working against the dam mass and foundation. At some point, this combination of circumstances may produce structural deterioration causing the dam to rupture or disintegrate entirely.

Should such ever be the case on the Salt River, the cascading effect downstream would be catastrophic. One government study suggests that a flood crest as high as five million (5,000,000) cfs could roar through the metropolitan Phoenix area. That translates into a wall of water roughly ten miles wide. Other calculations estimate maximum flood elevations between 400,000 and 1.75 million cfs. These are illustrated in Attachment X.

Mr. Chairman, no one can predict circumstances certain that will precipitate this sequence of events, however, the Bureau of Reclamation, Corps of Engineers, Salt River Project and numerous

consultants are all agreed that an IDF at least twice, perhaps three times as great as originally thought possible might well occur in Arizona.

P.L. 95-578

The Reclamation Safety of Dams Act provides in pertinent part at Section 4(b):

> "Costs heretofore or hereafter incurred in the modification of structures under this Act, the cause of which results from new hydrologic or seismic data or changes in state-of-the-art criteria deemed necessary for safety purposes shall be nonreimbursable and nonreturnable under the Federal Reclamation Law".

Theodore Roosevelt Dam was designed at the turn-of-the century by Arthur Powell Davis of the Geological Survey using 25 years of rainfall recorded at Fort Apache for the Salt and its tributaries. Davis stated in his report to the Secretary of the Interior (Water Storage on Salt River, Arizona, 1903): "it is estimated that the maximum flood wave possible at Salt River Reservoir (Theodore Roosevelt Dam) is 220,000 cubic feet per second ..."

Some years later the Bureau recalculated the IDF for Roosevelt to include a peak flow of 214,000 cfs, a duration of eight days and an inflow of one million plus acre feet.

But after the events of 1980, using 100 years of actual rainfall and runoff, the Bureau of Reclamation defined the IDF for Roosevelt as a peak flow of 678,000 cfs, a duration of 15 days, and an inflow of 2.5 million acre feet.

This dramatic increase is due in part to the expanded data base as opposed to limited records of the past. But the new IDF was also developed in large measure by the application of some very sophisticated computer techniques. For example, the most severe storms of record are identified, maximum probable precipitation projected, effects on the watershed simulated and resultant runoff routed through existing or proposed containment and spillway structures. Clearly a quantum leap from the rudimentary state-of-the-art available at the turn of the century.

The significance of this is that the Bureau now recommends additional spillway capacity and surcharge at Theodore Roosevelt, i.e., reservoir capacity located above the spillway gates and below the top of the dam, to safely manage the IDF. Although prediction is no substitute for prevention, this additional storage room may well represent the difference between prudent planning and catastrophe on the Salt system.

Conclusion

The state-of-the-art of dam safety is evolutionary in nature and extensive in scope. We submit that the design and construction of Theodore Roosevelt Dam more than three-quarters of a century ago provides a textbook example of the change contemplated when this Committee wrote the Reclamation Safety of Dams Act.

Mr. Chairman, we are troubled by the Administration's recommendation to revoke the longstanding Reclamation policy of nonreimbursability for dam safety purposes. It seems to us to

be highly inappropriate for the government to declare design flaws in federal structures based on federal criteria, and then require a federal solution funded through the repayment provisions proposed today. We urge the Committee to reject the Administration's amendment to rewrite Section 4 of the Act.

Enactment of S. 956 as introduced, will permit the Bureau to develop and implement prudent measures for 27 dams located in states that have already suffered loss of life and property due to dam failures. In our opinion, approval of S. 956 will reassure confidence in those who have designed and built the dams, and in the governmental institutions where the final responsibility for the public safety rests.

Thank you. We will be pleased to answer any questions you may have.

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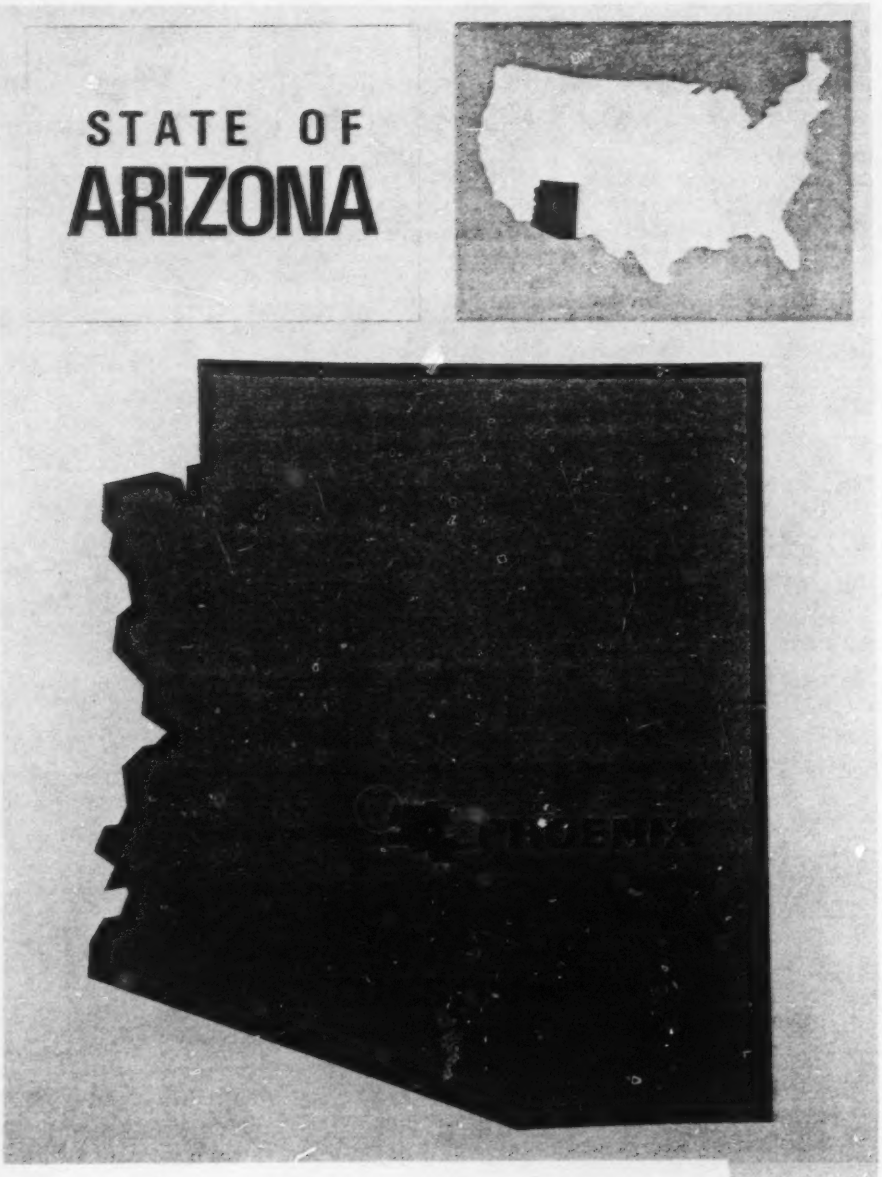
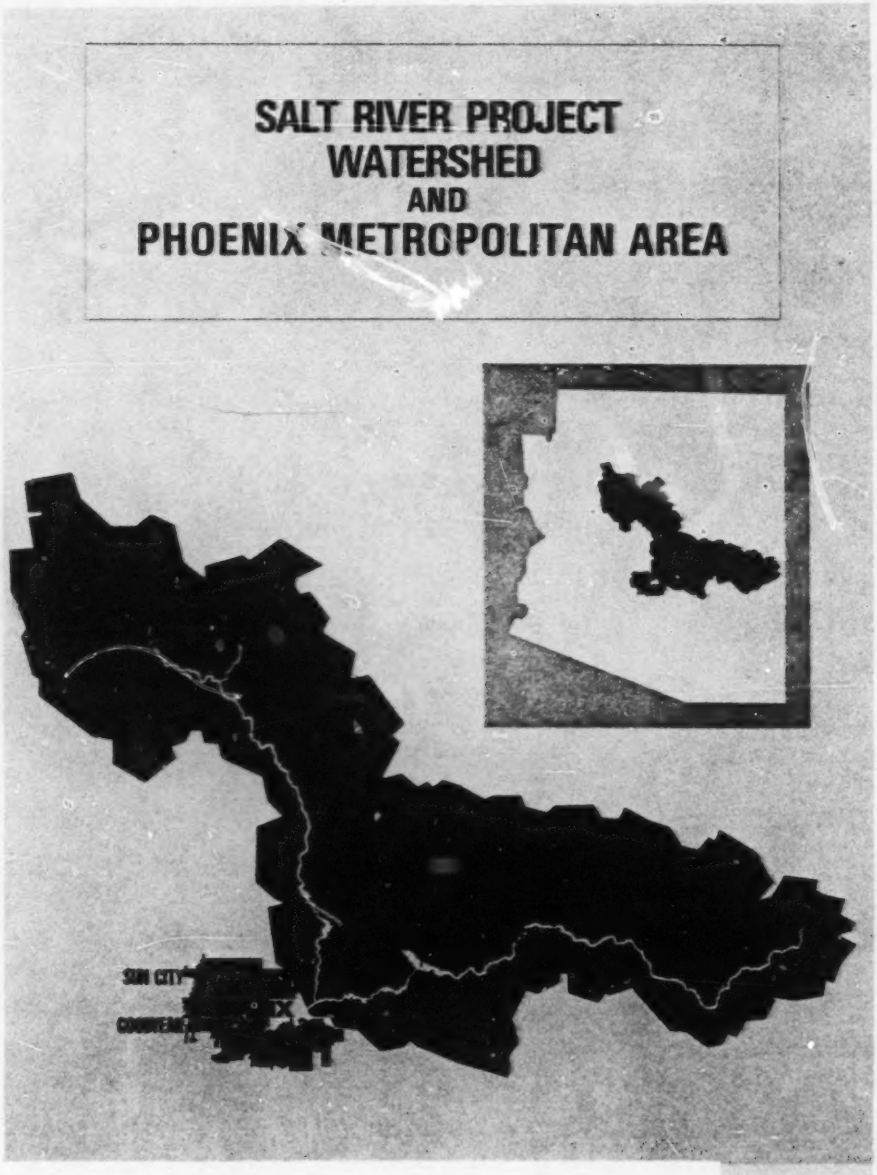


Attachment I



Attachment II

HORSESHOE DAM

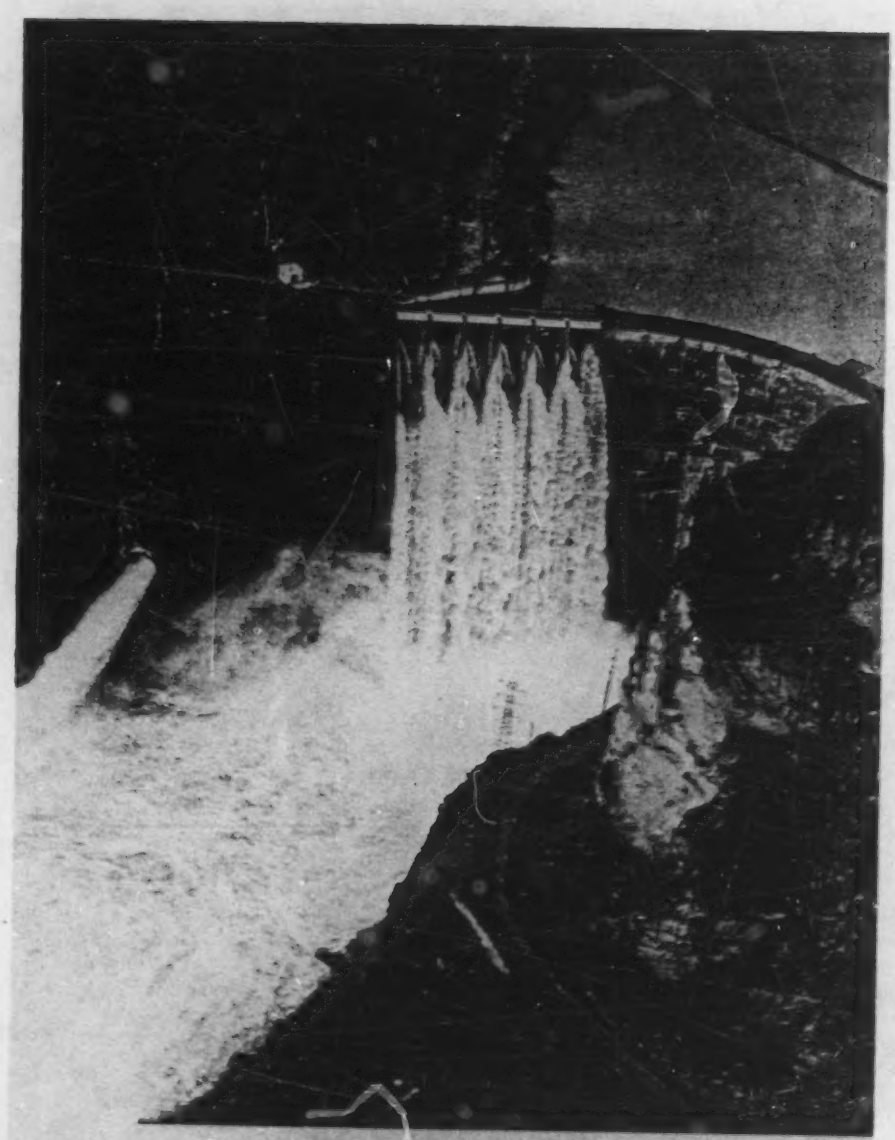
Attachment III

BARTLETT DAM

Attachment IV

THEODORE ROOSEVELT DAM

Attachment V



HORSE MESA DAM

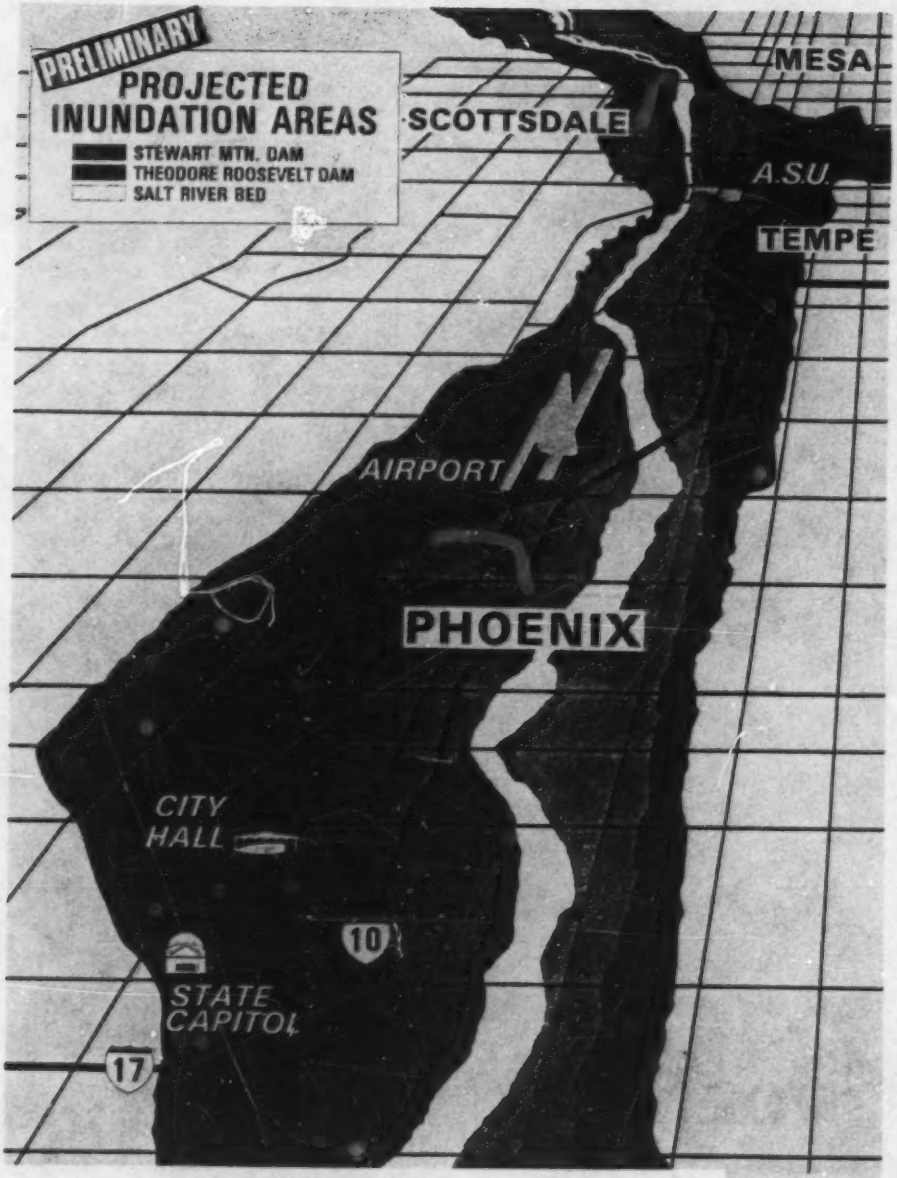
Attachment VI

MORMON FLAT DAM

Attachment VII

STEWART MOUNTAIN DAM

Attachment IX



Attachment X

Senator MURKOWSKI. Thank you very much, Mr. Teeples.

I would like to have some clarification on, I think the significance of some of the reference statements, particularly the statement that originally the estimated maximum flood wave possible in Theodore Roosevelt was 220,000 cubic feet per second. My question is: Is that a direct comparison with the Bureau of Reclamation updated figures on the anticipated peak flow of 678,000 cubic feet over a duration of 2 weeks? 15 days? Are those figures comparative or are they a different set of circumstances that are associated with the computation of those figures?

Mr. TEEPLES. The 220,000 was by Mr. Davis back at that time.

Senator MURKOWSKI. But that was what the dam was theoretically designed under.

Mr. TEEPLES. The 214,000 is what is on record now as the design necessary for the dam. The Bureau is now projecting with all the modern techniques and all the additional data 678,000, which is three times as much as the dam was designed for. We don't believe we'll ever live to see such high flows, but that is the maximum that they feel would ever occur. We're more concerned with flows in the range of 220,000 to, say, 300,000 or 400,000. That will create problems by themselves with the existing structures.

Senator MURKOWSKI. We can assume, though—is there a safety factor built into the original estimated peak flow capacity or do you know?

Mr. TEEPES. No; they don't design a safety factor in the hydrology. They design a safety factor into the structure.

Senator MURKOWSKI. It's an obvious conclusion, Mr. Teeples, if these figures are correct, the exposure is nearly three times what the design apparently—the dam was apparently designed for.

Mr. TEEPLES. That's correct. If those figures are correct as established by the Bureau, that is correct, sir.

Senator MURKOWSKI. There was a statement in your testimony that reads as follows: The Bureau of Reclamation has identified 27 dams within the jurisdiction of the committee, including 2 on the Salt River in Arizona, and I assume those 2 are the Theodore Roosevelt and Stewart Mountain Dams?

Mr. TEEPLES. That's correct.

Senator MURKOWSKI. And your statement was "that also require safety modifications." Yet at another place in your testimony—it was not in your prepared testimony—I think you made the general statement that inferred that the dam, Theodore Roosevelt Dam, was unsafe. Would you clarify the extent of that general statement in view of your specific statement in here stating that the two dams required safety modifications?

Mr. TEEPLES. As far as the safety of the structural capability of Roosevelt Dam, there's no problem whatsoever. It's the passing of the large flood through the structure is where it is indicated to be unsafe. The maximum capacity of the spillways through the dam is 180,000 cubic feet per second, so assuming that you have more than 150,000 cubic feet per second flowing into the reservoir, the dam being full, it's obvious that the 150,000 cubic feet per second would pass through the spillways and the balance would have to go over the top of the dam. The flows that we experienced in 1980 were larger than 150,000 cubic

feet per second. Fortunately, we had some space to reduce that high inflow and could pass the flow through the dam by having some space at that specific point in time.

Senator MURKOWSKI. So it's your contention, basically, that the dam is basically safe, subject to the exposures associated with this unusually high runoff which was very much a potential and very realistically a threat structurally?

Mr. TEEPLES. That's correct.

Senator MURKOWSKI. And you anticipate that the expanded spillways and, perhaps, the raising of the dam 50 feet, that that will suffice to meet the readjusted figures of annual runoff—not annual runoff—high-point runoff as associated with the statement made by the Bureau of Reclamation which defined the peak flow as 670,000 cubic feet per second?

Mr. TEEPLES. I met a week ago or so in Denver with the design engineers studying Roosevelt Dam, and raising the dam, modifying the spillways or whatever they end up doing to meet the inflow of 678,000, that is still being studied, and we assume they'll have an answer by the end of this year.

Senator MURKOWSKI. It's my understanding that there has been some consideration of another dam to replace the Theodore Roosevelt Dam.

Mr. TEEPLES. That's correct. They are also studying that as an alternative to raising the dam.

Senator MURKOWSKI. I assume it's cheaper to go ahead and expand the spillways of the Theodore Roosevelt Dam.

Mr. TEEPLES. They haven't arrived at a final estimate yet.

Senator MURKOWSKI. So there's no opinion you would have on which is the logical way to go, but from what I've seen and the testimony I've heard and the comments, it appears to be likely that the recommendation will be to expand the spillways system of the Theodore Roosevelt Dam.

Mr. TEEPLES. Yes; and possibly raise it.

Senator MURKOWSKI. I have another question. You may want to refer to your colleague. On the other hand, you may not.

In your opening statement you indicated that the Theodore Roosevelt Dam had been built by a methodology that probably isn't, unfortunately, utilized by the Federal Government anymore, that a territorial corporation secured a $10 million loan from the Federal Government for construction, and you further indicated that the loan was paid off in October of 1955. Was that 1955? Was that the original $10 million or had there been other funds borrowed over that period of 40-some-odd years that added to that?

Mr. TEEPLES. No, that was the original $10 million, and that was paid off.

Senator MURKOWSKI. Did the Government charge you any interest on that?

Mr. TEEPLES. I don't recall the details of whether they did or didn't. I assume they didn't.

Senator MURKOWSKI. So you had a 45-year loan and paid off the $10 million.

Mr. TEEPLES. That's correct. And we financed three dams below Roosevelt on our own in the intervening period.

Senator MURKOWSKI. Without any Government assistance?

Mr. TEEPLES. Without any Government assistance.

Senator MURKOWSKI. And are those dams identified in the testimony that you financed and built yourself?

Mr. TEEPLES. Yes; that's Horse Mesa Dam, Mormon Flat Dam, Stewart Mountain Dam, and Bartlett Dam. It was a joint venture between the Salt River project and the Federal Government wherein they paid for part of the reservoir for the Salt River Indian community.

Senator MURKOWSKI. So does the Salt River have title to these dams they built?

Mr. TEEPLES. No, sir, all the dams are in the name of the Government. Horseshoe Dam was built during the Second World War and paid for by the Phelps Dodge Corp., and the Federal Government, and it was also then placed in the name of the Government, so the Government owns all of the dams.

Senator MURKOWSKI. Why was the Government given title to the dams that they didn't put any money in?

Mr. TEEPLES. I couldn't answer that question sir.

Senator MURKOWSKI. Well, the next one is one that—and probably this isn't the appropriate place to ask it—and that's what would the attitude of the Salt River project be if the Government turned the title of the dams over to the Salt River?

Mr. TEEPLES. Well, I can't speak for our Board, but I'm sure that we would assume our responsibilities as we have done since 1917 in operating these facilities for the Government, and I'm sure our Board would certainly take a good look at it and make a good proper decision.

Senator MURKOWSKI. Wait a minute. I'm going to rephrase the question, as you might expect. It appears since there was a precedent established initially where there was a repayment for the Government's loan to the Territorial Corporation that even though the Government maintained title, we seem to have kind of a confusing pattern of policy after that where the Salt River project went in and, in effect, built dams with no contribution from the Federal Government, yet title still was vested in the Federal Government, and we're left with the reality today of the Theodore Roosevelt Dam—the fact that the Federal Government has title to it and that it needs substantial work, and the Federal Government, because of the budget constraints and the realities—that this thing is just not a situation that's addressed to this area, but is pretty extensive.

If we take into consideration your testimony which indicated 21,000 dams are classified as high hazard by the Corps of Engineers, that indicates a pretty significant exposure. Is it conceivable or could you provide for the record, if you are so desirous of—and I think the record will be open for 2 weeks; is that right?

Mr. BROWN. That's right.

Senator MURKOWSKI [continuing]. An opinion from the Salt River on what their attitude would be if the Federal Government said: Look, because of budget constraints, and you have the revenue-generating capacity through your association, if we were to turn these dams over to you lock, stock and barrel, what would be your attitude, and I don't mean to pose a question that presents you with some difficulties, but it's one that I think you should be prepared to address

as we proceed further on in this matter because the Government is talking about being exposed to a substantial commitment here, and you know what the realities are. I think there is a case that can be made. You know there is a dire emergency from the standpoint of the exposure. Yet the realities are that this thing came up nearly 3 years ago, and we're still relating to how we're going to resolve it and the funding—if the Federal Government does fund the $650 million or thereabouts for these dams, what are we looking at, at the earliest 1985, 1986, yet I know that the real threat and the real exposure is substantiated by your testimony and could occur at any time.

Mr. RAPPOPORT. Mr. Chairman, we welcome the opportunity to provide a considered opinion to the committee. I would make the observation in passing that many of the dams that have been identified by the Bureau of Reclamation, which have a potentially imminent—or which are a potentially imminent danger, should the Bureau's projected inflow design flood occur, are not unlike airports, perhaps, that have been designed for operation under contractual arrangements or lease arrangements that were designed and built by the Federal Government during the war as Air Force or Air Corps facilities and have since been turned over to communities, and while the airplanes in the state of the art of aviation have changed significantly, many of those airports have shorter runways and so forth and do pose additional exposures to the surrounding communities, and the analogy was pointed out to us on several occasions between dams and Federal airports. We will provide to the committee what we hope will be a comprehensive answer to your question.

[Subsequent to the hearing Mr. Teeples submitted the following:]

SALT RIVER PROJECT,
Phoenix, Ariz., April 15, 1982.

Senator FRANK MURKOWSKI,
Chairman, Energy and Natural Resources Water and Power Subcommittee, Washington, D.C.

DEAR SENATOR MURKOWSKI: We appreciate this opportunity to respond to your request for comment on the suggestion made during the March 27th subcommittee hearing in Phoenix that title to the dams located on the Salt and Verde Rivers be transferred from the United States to the Salt River Project.

The Project operates these structures, including the water storage, diversion and distribution facilities and certain appurtenant hydroelectric facilities, as an agent of the United States under various contractual agreements pursuant to federal reclamation law. We are concerned that any change resulting from the abandonment of the paramount right of the United States in the Project might well result in complex questions for which neither legal precedent nor practical solutions at this time exist.

For example, the construction costs for most of these facilities were financed through federal loans, subsequently repaid in full, collateral being in the form of lands within the Project boundaries and through the issuance of bonds repaid with revenues from the sale of electricity thereby generated. Change in ownership could becloud the standing and status of the Project with respect to the administration of withdrawn lands associated with the structures, applicability of Bureau of Reclamation operating criteria for federal dams, liability for pecuniary and/or punitive damages, maintenance of related rights-of-way, special use permits and cooperative agreements among other federal agencies. Change in ownership also raises a more fundamental question: What interest will the federal government retain in reclamation projects?

The abandonment of the federal responsibility, if extended to any or all of the dams identified by the Bureau of Reclamation as requiring remedial modifications for safety purposes resulting from new hydrologic data or changes in state-of-the-art criteria pursuant to the Reclamation Safety of Dams Acts (92 Stat. 2471, 43

U.S.C. 506, et seq.) might well be construed as an attempt to dismantle the federal reclamation program. In view of our long and productive association with the Department of the Interior, we question the advisability of such action.

It was also suggested during the hearing that the transfer of ownership would increase the Project s assessed valuation and permit the issuance of bonds to finance repairs needed at the dams. At this time we are unable to state whether these structures could or would be used as collateral, however, preliminary calculations indicate that the assessed valuation would indeed increase.

By way of background, the Project has historically made voluntary contributions in lieu of ad valorem (property) taxes on electric facilities to Arizona state, county, city and school districts. Since 1964 the Horse Mesa, Mormon Flat and Stewart Mountain Dams and the hydroelectric facilities at Theodore Roosevelt Dam on the Salt River have been included in the base from which Project payments are calculated. Theodore Roosevelt Dam and the Bartlett and Horseshoe Dams on the Verde River, are not included in the base as these structures are considered to be primarily for irrigation purposes.

In 1981, the Project's in lieu payments totaled $35 million, including $580,000 ascribed to the Horse Mesa, Mormon Flat and Stewart Mountain Dams, and the hydroelectric facilities at Theodore Roosevelt Dam.

According to current estimates by the Bureau of Reclamation, additional storage and spillway capacity required for safety purposes approximates $350 million on the Salt and Verde Rivers. Based on the present formula for computing the Project's in lieu payments, each additional one million dollar increase in base translates into incremental annual payments of $11,000. Accordingly, if the entire $350 million required for dam safety purposes were included in the tax base, Project in lieu payments would increase some $4 million per year.

In conclusion, we are concerned that the federal government has identified the six Reclamation dams on the Salt and Verde rivers as unsafe pursuant to the Reclamation Dam Safety Act, which provides in pertinent part that "modifications necessary for safety purposes shall be nonreimbursable and nonreturnable under the federal Reclamation Law." We therefore urge you, Mr. Chairman, to not revoke or otherwise revise this fundamental principle of the reclamation program.

Thank you again for this opportunity to supplement our testimony before your Committee.

Sincerely,

REID W. TEEPLES,
Associate General Manager-Water.

Senator MURKOWSKI. It's my understanding that the combined costs of the two projects that seem to prioritize themselves with regard to exposure to the area on the Roosevelt Dam are $350 million and the Stewart Mountain Dam at about $9 million.

Mr. RAPPOPORT. Senator, I believe that, if I may, there's——

Senator MURKOWSKI. Excuse me. Yes, that's not correct.

Mr. RAPPOPORT. I think, as Mr. Teeples pointed out, we could have a final decision—a final decision has not yet been made as to the specific type of modifications that would be made, and I think that $350 million was a generic number.

Senator MURKOWSKI. Yes, it included Bartlett, Horseshoe, Horse Mesa, and Mormon Flat.

I have a thing that's been provided by Stewart Mountain to modify the spillway at $8.9 million, but the figure I have of $350 million includes Theodore Roosevelt and the others. Do you have any knowledge of what the Theodore Roosevelt foundations, spillway modification, and raising of the dam might be?

Mr. RAPPOPORT. Mr. Chairman, I don't to the extent that we have an accurate number that might be helpful to you, but for submission to the record I would like the opportunity to get back with the Bureau, so that the number we give you is one that reflects a consensus between the Bureau and Salt River.

Senator MURKOWSKI. When you issue your bonds, your revenue bonds based on the revenue potential of the Salt River project, how much of a factor in the financing is the real estate that you own as far as the net worth? I assume when you put up a revenue bond you also put up your guarantee behind it, do you not?

Mr. TEEPLES. Well, it depends on whether or not it's a water facility, power facility, and I'm not familiar with the financing aspect of our problem. Mr. Rappoport may be able to answer that question, but I'd like to make a comment, Senator, because I was asked the same question in Washington a couple months ago in testifying before the House about cost sharing.

We here in Arizona are not looking for handouts. We will take care of our own responsibilities, but we do feel that the Federal Government has responsibility in the safety-of-dams portion of these structures. Now that doesn't mean that the people of Arizona—like you said, we have an emergency here. We may be able to put some money up front if the Congress doesn't have moneys to appropriate in these early years, and maybe we can find a way to put some money up front that we can be paid back over a period of time for our share that we have advanced, and I think that might be a real possibility.

Senator MURKOWSKI. It's my understanding you provide all the operating cost maintenance, which I'm sure is substantial, on these old dams or the entire system that we went over yesterday.

Mr. TEEPLES. That's correct, and we've added many, many millions of dollars to these structures over the years. We've added modifications on the spillways; we've added modifications on the communications systems and safety devices under the OSHA Act.

Senator MURKOWSKI. But you do that for the benefit, theoretically, for the Federal Government, which is the owner of the dam, so as you upgrade it, put new powerhouses in and so forth, that's, theoretically, the property of the Federal Government.

Mr. TEEPLES. That's correct.

Senator MURKOWSKI. And if this were turned over to you, you would have a substantial addition to your capital account associated with the theoretical net worth of the Salt River project, which I assume would enable you to borrow, theoretically, at a lower bond rate.

Mr. TEEPLES. As I said, I'm not in the financial area, but I assume you are correct.

Mr. RAPPOPORT. Senator, I would make an observation, coming back to the cost figures, I would like to stress that there should be a number of estimates made in connection with various studies, and it's my understanding that until an actual decision is made as to the type of modification that's going to be recommended and approved by the Bureau that there really isn't a firm figure. One common number, though referred to for Theodore Roosevelt is on the order of $150 million versus up to $200 million or $200 million-plus, so that is the order of magnitude for Roosevelt, but we would respectfully like to submit a more detailed response as soon as we can clear it with the Bureau.

Senator MURKOWSKI. Well, we'll certainly ask the Bureau in Washington, D.C., about the invasions of the New Federalism, if I may use the term rather loosely, the application of what the Government

should do and should not, the role the Government is playing and the role that some of the professional administrators that are in Government would like to see the Government continue to play. The relevance of that is something that is being examined, as you know, whether it be a concept that we have discussed in general terms here or other Federal Government responsibilities that they are turning over.

I happen to be involved in significant disputes involving a transfer of certain Bureau of Indian Affairs educational facilites over the various States. It sounds like the Bureau has operated these facilities for a number of years and has not maintained them up to State standards, and, in effect, the States have taken over the responsibility. But the physical facilities that the BIA is transferring over don't meet the State code, and before the State assumes the responsibility for the facility, the facility has to be upgraded to meet the State code. The parallel is different, but there is somewhat of a parallel in the sense that you're operating and maintaining assets of the Federal Government. It is better that you have title to those assets? I don't know. But it might be in your best interest and it might not.

Those Federal administrators, I'm sure you know what side they come down on, but we're not here to prolong that particular discussion. We would appreciate if prior to the next hearing or in the event that you have time within the next 2 weeks to address that subject, and it would not be necessary that you present any conclusions, but if you would, perhaps, address it from the idea of the advantages as you see them and give some thought to what the physical assets would do to the financial position of the Salt River project and whether there would be some advantage to having these assets with regard to borrowing capability. I would assume you would contend that if you were going to take them over, they should be transferred at the time that they were in a physical condition to meet whatever the Federal Government requires as far as dam safety, but that's your own business, and I've gone on long enough.

I've been given a note. Can we have copies of the photos? Do you want all those back?

Mr. RAPPOPORT. Mr. Chairman, we'd be glad to provide them.

Senator MURKOWSKI. Is that done with some degree of scale? Maybe it was done by Jimmy the Greek.

Mr. RAPPOPORT. No, Senator, that represents two possible flood flows through the Phoenix area. The gray area or the dark area in the center of the——

Senator MURKOWSKI. That's where you drove your rowboat.

Mr. RAPPOPORT. That's the natural boundary of the Salt River bed. The yellow area represents a modest—not modest, but a possible flood flow through the Phoenix community were the Stewart Mountain Dam to collapse, and the number on that, Senator, would be approximately a 400,000 cubic feet per second—excuse me—1.75 cubic feet per second coming through the Salt River or above ground of the Salt River bed. The organge area represents a flow of—Senator, I apologize—the smaller area is 400,000. The larger orange area is 1.75 million cubic feet per second.

Senator MURKOWSKI. We're certainly not going to contest those figures.

Mr. RAPPOPORT. Well, it was scaled from the Bureau of Reclamation studies as to what would happen if the inflow design flood occured and the structures were unable to sustain them.

Senator MURKOWSKI. Thank you.

I might ask and at this time add to our rather cluttered table here—Terry finally joined us—Mike, would you like to come up to the table? I apologize. You're certainly welcome.

And, Lisa, you are too.

Terry, do you have any questions you would like to pose on behalf of Senator Goldwater? It's a good chance to ask a question anyway.

Mr. EMERSON. No questions, Mr. Chairman. I would make a comment, and if this would be in the form of a question to which the witness can respond.

Senator MURKOWSKI. Fine.

Mr. EMERSON. I would comment that the bill before us is an increase in authorization and then that passage of that bill would have to be followed up by the specific appropriations, so that my comment is that even though we don't have a specific figure on the cost of the modifications to Roosevelt Dam at this time, the legislation before this subcommittee is flexible enough since it relates to authorization that it would accommodate whatever modifications are finally settled upon, and then the time to provide a specific figure to Congress is the later point in time when the actual appropriation has to be made. Do you wish to comment at all on that?

Mr. RAPPOPORT. I would respond. Mr. Emerson, that the $650 million figure represents a general amount that the Bureau estimates it would eventually require to satisfactorily rectify design or construction deficiencies in some 35 structures located throughout the West. In the process, as I understand it, it would be very nice to have all of that work commenced immediately and be completed within a reasonable time period, but it seems to me that the realities of the situation are going to be that such moneys would be appropriated or such moneys as may be appropriated would be done so on an incremental basis, and what this basically does it gives the Secretary of the Interior a clear signal from the Congress that he has an obligation to expeditiously proceed with repairs that have been called for, and that's my response to your statement, sir.

Mr. EMERSON. And for the record, you would confirm again that it is your wish that Congress proceed expeditiously with enactment of this legislation.

Mr. RAPPOPORT. On a day like today it's difficult to make too hard a case, but had the hearing been held yesterday or the day before when it was raining heavily and the rains were filling our reservoirs, our answer would be affirmative.

Mr. EMERSON. No other questions. Thank you, Mr. Chairman.

Senator MURKOWSKI. Mike, do you have questions?

Mr. CRUSA. No, Senator.

Senator MURKOWSKI. Thank you very much, Mr. Teeples and Mr. Rappoport. I think your testimony has been very significant, and it was very well put together, and your visual presentations were excellent. We'll look forward to receiving those, and I would respectfully remind you that there are some proposals in the Congress of the United States for the Government to dispose of excess Federal prop-

erties, and the atmosphere existing, if you do have any foresight in that area or any greed—I use that term loosely—this is the time to come forth.

Mr. RAPPOPORT. Thank you very much.

Senator MURKOWSKI. Our next witness is Mr. George Campbell, chairman, Maricopa Board of Supervisors; chairman, board of directors, Flood Control District, Maricopa County, Phoenix, Ariz.

Mr. Campbell, we welcome your testimony before the committee and look forward to hearing your presentation. Please proceed.

STATEMENT OF GEORGE L. CAMPBELL, CHAIRMAN, MARICOPA COUNTY BOARD OF SUPERVISORS AND CHAIRMAN, BOARD OF DIRECTORS, FLOOD CONTROL DISTRICT, MARICOPA COUNTY, PHOENIX, ARIZ.

Mr. CAMPBELL. Thank you, Mr. Chairman. I think in the interests of time that probably trying to follow the eloquent statements of the previous speakers, in particular, our Governor and our mayor, it's very difficult to add anything to it, and I won't make that attempt except to underline everything that has been said up to this time and reiterate the need for something to be done for our area, and with that in mind, Mr. Chairman, and not wishing to be redundant, I'd like to put my statement in the record and let you go on with the rest of the meeting.

[The prepared statement of Mr. Campbell follows:]

TESTIMONY ENDORSING THE PROPOSED AMENDMENT TO THE
RECLAMATION SAFETY OF DAMS ACT (1978)

I am George L. Campbell, Chairman of the Maricopa County Board of Supervisors and Chairman of the Board of Directors of the Flood Control District of Maricopa County. In both these capacities, I strongly endorse Senate Bill 956. The Amendment of Public Law 95-578 will better provide for the modifications necessary to make our dams safe by today's engineering and scientific standards. This is critically important to the people of Maricopa County for two reasons: safety and flood control.

In February 1980, Maricopa County experienced the terror resulting from the question of dam safety. With reservoirs nearly full and flooding already taking place, another storm was forecast that put the whole metropolitan area in fear of failure of Stewart Mountain Dam. Fortunately, the storm veered away and the danger passed, but it left an indelible impression in our minds. Maricopa County must be protected from the catastrophic impact of a dam failure. The potential devastation and threat to life resulting from such an incident is simply unacceptable.

Maricopa County has been subjected to three major floods since 1978, causing a total of nearly 150 million dollars in damages. Those events illustrate the need for greater flood control capabilities on the Salt, Verde and Agua Fria Rivers.

The implementation of flood control measures is greatly influenced by dam safety consideration. The flood control alternatives recommended as a result of the Central Arizona Water Control Study all require

modifications of certain existing dams to meet safety criteria. Without these modifications, it is unlikely that the flood control measures can be implemented.

Inadequate funding to make existing dams safe not only invites disaster from failure of those existing dams, but works to prevent construction of needed flood control projects. For these reasons, I urge the enactment into law of Senate Bill 956. Even the increased ceiling is no more than a start in solving this massive problem.

Senator MURKOWSKI. Thank you very much, Mr. Campbell. Terry, do you have any——

Mr. EMERSON. No questions.

Senator MURKOWSKI. No questions. I thank you very much.

We'll proceed with the witnesses.

We have two requests for witnesses' time before the committee, Mr. Frank Welsh and Ms. Carolina Butler.

Could we call on Mr. Welsh at this time to appear.

Mr. Welsh, I understand you do have a prepared statement.

Mr. WELSH. No, I don't, Senator. I just found out about this 2 days ago, in fact, 1 day ago.

Senator MURKOWSKI. How did you find out about it?

Mr. WELSH. I received a call from somebody and then called Senator DeConcini's office, and we were told it was in the capitol, but we didn't know where.

Senator MURKOWSKI. Please sit down.

We'll get an answer here, because if you didn't know about it, I tell you where you can start looking the next time, because it has been published, and orders have been given, and we'll see what we come up with here.

Mr. WELSH. We're essentially a citizens' taxpayer group, nonprofit.

Senator MURKOWSKI. March 16th there was an indication in the Congressional Record. I assume we did something about it. Can you expand on that?

Mr. EMERSON. Well, I know that at 9 o'clock Wednesday morning the local media had a press release from Senator Goldwater's office announcing the hearing and congratulating you, Mr. Chairman, for deciding to hold the hearing here.

Senator MURKOWSKI. I apologize. You've not had notice, and we'll try and do better. I assume it's supposed to be in the papers.

Mr. BROWN. We have to rely on the media.

Senator MURKOWSKI. Well, they were here today, but they were late and left early.

Please proceed, Mr. Welsh, with your statement.

STATEMENT OF FRANK WELSH, EXECUTIVE DIRECTOR, CITIZENS CONCERNED ABOUT THE PROJECT

Mr. WELSH. As I recall I did find out through the media. There was a channel 3 or 8—something in the morning on Wednesday. I then called several offices of the congressional delegation.

We are privileged to be here, Mr. Senator, and we're pleased that you came out to see us. Saves us a trip to a wet and cold Washington, D.C. As a matter of fact, I've been back in your fair city several times. Three years ago I testified on dam safety before the Congressional Appropriations Subcommittee Public Works; told them about our unsafe dams here, explained that we have access to several Government reports, dating back to 1970, stating that Roosevelt and Stewart Mountain were unsafe dams.

Previously, in February 1980 we testified before the State Legislature of Arizona in reference to getting the Salt River project into the business of flood control.

We at that time also stated that we had unsafe dams on the Salt River and, again, were ignored. One year later almost to the day Governor Babbitt, as he testified, prepared the city of Phoenix for evacuation because an unsafe dam was about to go.

Here it is 12 years since the Government knew the dams were unsafe and we find nothing has been done. We don't even know what solution is best at this point. We have little doubt that we must repair Roosevelt Dam and Stewart Mountain Dam. We're in favor of that.

And according to the study, the Orme Dam Alternative Study, October, 1981 Fact Book it should cost $100 million to $130 million to raise or build a new Roosevelt Dam, and it should cost approximately $30 million to repair Stewart Dam. We're talking about a range of $130 million to $160 million. We suggest that the Government lends this to us. We need it now.

Conversely, we would like to take $160 million that's supposed to be in the budget this year for CAP and use that instead for dam safety. We know that creates problems, but we, as a citizen taxpayers' group find that a waste of tax dollars whereas dam safety is necessary.

The existing law on dam safety is fine, in our opinion. We particularly like the least cost aspect of it. Any repairs will be done to the dams, and they will be done at least cost, as opposed to some more modern bureaucratic method that justifies dams. We are quite concerned, however, about possible attempts to amend the existing law to permit the building of new dams.

The bureaucracy may have run out of things to do, and they always like to spend our tax dollars. We have a perfect example here on the Verde River. They are trying to build a quarter-billion dollar Cliff Dam under the guise of dam safety to protect the two small dams. I would note that the Bureau of Reclamation's own studies show that instead of spending $241 million for the Cliff Dam, we can spend $210 million and make the existing dams safe. This study was dated May 1981.

Now of the two dams the upstream dam is Horseshoe. This is an earthen dam. Upon overtopping it will, it is presumed, fail. The question is: Is this an unsafe dam? How often will it fail? According to the Salt River project's safety dam study, dated September 1981, this failure would occur once every 3,000 years, and just something else to worry about, this dam is a tenth the size of Roosevelt Dam. It is well upstream. Upon failure it would appear that it would not even be noticed in the flood of—in a large, large, large flood that would cause its failure, so we know that Horseshoe Dam is really an unsafe dam.

We would note that if it failed once every 3,000 years, one report notes it would cost $18 million to replace it, so eliminating that, the study shows that downstream Bartlett Dam can be made safe. A private consultant's study shows that Bartlett can be made safe for $12 million. The question is, is Bartlett really an unsafe dam itself? Once every 1,000 years, according to the Salt River project Bartlett would be overtopped, but it is a concrete dam. This does not mean it would fail.

We would like to ask you to be cautious with these Government handouts. As we've testified, we must repair Roosevelt and Stewart Mountain, but additional moneys to the magnitude asked poses a seri-

ous question. Also we would like to point out if you make the local governments under the New Federalism repay these dams, then you will not see this money thrown away the way it has been, so we ask lend the money to the Salt River project or to the State of Arizona to repair the dams. Make us repay it, and then we'll see what is more important, repairing our awful roads or making dams safe that aren't really unsafe.

I would add that the Salt River project every year for the last, roughly, 10 years has been using $10 million, approximately, from our electrical bills to subsidize their water operations. May we suggest that they do repay a $100 million loan and replace Roosevelt in 10 years, and this would be a much better use of our electrical revenues than subsidizing cheap water for large landowners around this valley.

Essentially, let me sum up by saying we are in favor of repairing and have been longer than anyone else. It did take a flood in 1980 and almost evacuation of the city of Phoenix for us to come out in favor of repairing our unsafe dams. We are glad that others finally got religion, but we wish that they had backed us up. However, we are in favor of keeping the existing law as it is requiring least cost repairs to existing dams, and we thank you, Senator.

Senator MURKOWSKI. Thank you very much, Mr. Welsh. We appreciate your testimony, and I think your point of view is certainly important, and the group that you represent obviously are the reason why we are all here. Thank you.

Carolina Butler.

Ms. Butler, we welcome you to the committee, and we look forward to your testimony.

STATEMENT OF CAROLINA BUTLER

Ms. BUTLER. Thank you. Welcome to Arizona, and I appreciate the fact that you've come to Arizona to hear our testimony and to hear our input because it's hard for individuals to travel to Washington, so I really appreciate it when the Government comes to us.

The first thing I would like to say is that I'm glad, as a result of our Central Arizona Water Control Study, that the Orme Dam was not chosen as—picked as the chosen alternative, because we're talking about dam safety today, and Orme would have been much closer to the Phoenix metropolitan area, and in case that thing would fail in the future, it would have been a great body of water much closer to Phoenix. One of the advantages of the existing dams that we have is that they are so far upstream that warning time to downstream residents in case of failure is great, so we would have fairly ample warning time. So that's one of the things that you should take into account.

Before I start out on my thoughts, I would just like to correct a few things which some of the previous people have said.

Senator MURKOWSKI. Please proceed.

Ms. BUTLER. Mayor Hance said that—she argued that we need some upstream flood control and dam safety for the Rio Salado project, which she says is very important to the development of the Phoenix metropolitan area. I would like the Senator to know that the Rio Salado project was rejected by Phoenix voters in a bond election—I

think in 1975—so I don't see why she continues to use that as an argument for anything when voters rejected it.

Now Senator Goldwater's representative repeated a false statement, I think, which was—which is often repeated. I think it was repeated again by, yes, by Mr. Teeples, and that is that we need dam safety because 1½ million people are downstream of those dams. Well, there are 11½ million people. That's the total population of our Phoenix metropolitan area, but most of those people don't live downstream. They don't live along the Salt River, but the majority of those 1½ million people would not be affected by the Salt River.

Senator MURKOWSKI. You feel that the poster that was up here that showed the breadth of the area was basically accurate?

Ms. BUTLER. I didn't see the photos, but I would certainly recognize the truth of a photograph, and I was here when the floods did occur, but what I am saying is that people keep saying again and again—in fact, they used to when they were arguing for the Orme Dam—that we need Orme Dam or we need safety of dams because we need to protect 1½ million people, but 1½ million people do not live along the Salt River.

And then the last thing I would like to just correct is that you asked Mr. Teeples if the Salt River project pays for the maintenance of their dams every year, and I think he replied yes, but in a letter that I have here from Wes Steiner in response to a letter that I wrote to him in 1979 asking about safety of dams and whether we had an emergency evacuation plan, he responded talking about damages. He said the damages which you cited is caused by recent floods and are being repaired under the Federal disaster program, so, therefore, that implies to me that Mr. Teeples was wrong and SRP does not pay everything.

OK, now these are just my thoughts and they're going to be a little disjointed. I do not have a prepared statement. It was at Scottsdale, maybe Wednesday, and short notice, and the next day I called Senator DeConcini's office for speaking time, and I would be curious as to how the other people received ample time to prepare their statement.

Frank Welsh and myself are private citizens but we're heavily involved in central Arizona water control studies, so people know we are interested in this issue, but we were not extended, apparently, a personal invitation.

OK, one thing, I got a bill in the mail earlier this year for my flood insurance from the Federal Government, and the Federal Government, I'm grateful, provides the opportunity for private citizens to purchase insurance for the homes if they are concerned about flood protection, and, like I said, I'm happy that it's available. The Federal Government subsidized it to a great extent in past years, but this year when I got my bill for my annual flood protection insurance, my bill had tripled, and so I called my insurance agent and asked him why. He said because the Federal Government had decreased the subsidy provided to policyholders. They sent this little notice from the Federal Insurance Administration: The Federal Insurance Administration has determined that the general public now bears too great a share of the burden for the subsidization of the policies.

So this is also in keeping with the very legitimate concern of the Federal Government to ask local beneficiaries of the safety of dams investment who have paid for it, that they should pay their own fair

share, so I went ahead and paid my increased Federal insurance policy. I wanted to let you know.

From this I would like to comment on other problems we have locally and, perhaps, nationally. Here in Arizona we—our State law—we have adopted the standard of 100-year flood protection. Our homes, our structures are built to meet a 100-year standard. Even the hazardous waste law passed last year by the State legislature only requires that hazardous waste sites not be located in the 100-year floodplain. My home is protected, supposedly, from a 100-year flood.

Now the safety of dams repair job that they want on Roosevelt and Stewart Mountain is the question then before the U.S. taxpayers. You are to provide 200-year flood protection for a thin strip of Arizonans, who were downstream from those two dams, so I will pay my increased flood insurance, and then I will also, as a U.S. taxpayer, be asked to pay to reinforce Roosevelt Dam and Stewart Mountain Dam for a few residents which are downstream so that they can have a 200-year flood protection. Now, I don't know enough about the issue and what I've heard today doesn't give me the answer, but I feel that it is unfair to me and it is unfair to the rest of the U.S. taxpayers that they be asked to do that.

So you see we have this contradiction whereby State law—here we have a 100-year floodplain protection standard, and then we apparently want to give preferential treatment to people downstream of the Stewart Mountain and Roosevelt Dams, and so obviously to do that throughout the country it would be very costly, and we also would end up with the unfair treatment, protecting some citizens from a 200-year flood and then most citizens from the 100-year flood, and then in connection with that, if these downstream cities and officials who are responsible for those cities—if they're so interested in protecting this and gaining this 200-year flood protection or 500-year flood protection or whatever it may be, don't you think that they would keep development out of a 200-year floodplain. That's what seems to me would be reasonable, but they don't do it.

If Roosevelt Dam now is subject to a 678,000 design flow, well, perhaps, we ought to not permit any more development. We have got to decide what is the standard, so you know, there is a contradiction that has to be decided locally and nationally because the same situation exists in other communities. People—the governments, local and Federal, have to decide whether they are going to provide citizens with 100-year flood protection or 200-year flood protection, and now let's see. OK.

Yeah, I want to also tell you that if you were born in 1941, you had to wait to be 24 years old in 1965 before you saw one drop of water coming down the Salt River, because in the written history of the Salt River that has been the longest dry period, so it almost sounds ludicrous to be asking for money, millions of dollars, for the safety of dams, for an insurance program, for a water system which for 24 years you didn't see one drop of water here in the Salt River in Phoenix, so you have to know about that also.

Now the photographs that you saw were very scary, and we had a lot of destruction at that time. I was here then. As a matter of fact, I was born along the banks of the Salt River more years ago than I care

to say, but anyway there was a lot of smoke at that time, and so I tried to cut through the smoke to get some real hard figures. I wrote to the Arizona Division of Emergency Services, and I said, "OK, tell me exactly how many homes were damaged by the flooding during this 1980 record flow," and they responded to me with a letter that said that 100 homes along the Salt River had been damaged and 26 along the Gila. The Salt eventually flows into the Gila.

So if you compare that to floods in other parts of the country like Fort Wayne, Ind., where I have not heard the mayor ask for a dam, it's really a small amount of floods, and we are pretty lucky here that we don't have more development than we do. Here in the Phoenix metropolitan area we also have the cities of Mesa, Tempe, and Scottsdale, and there were no homes flooded in Mesa, Tempe, or Scottsdale from the record 1980 flood, so you have to look at the whole picture and realize that the Salt River is one of Arizona's major waterways, and we are actually lucky that unlike a tornado or some other natural disaster that you don't know when it's going to strike, you know that the Salt is going to have water in it sometime.

Another consideration, when the Federal Government invests money in dams, you know that as soon as you make those dams stronger or you afford greater flood protection downstream, cities are going to allow more development under those dams. And some year, as the flood engineers from the Bureau of Reclamation have told me, there's such a thing as a 50-year, 500-year, 1,000-year flood they're projecting or a 200-year flood, and you're going to incur more damages, so that's another thing to be taken into consideration.

It seems to me they're asking the Federal Government, again, I include Arizona, but in matters of water they spend money like water around here, and it's usually all the U.S. taxpayers that pay for it, and I'm one of these people who, I think, is a real conservative. I would like to see our Federal budget balanced, and I have suggested to the Federal Government places where we can cut back on Government spending, Federal spending, but here in Arizona it's an expensive kid.

You know right now Arizona Senators DeConcini and Goldwater and Congressman Udall—we love them all dearly. They're institutions around here. We really love them, but they're expensive. The Central Arizona project right now the price has gone to $2.4 billion this year. They're asking for another amendment to the public works bill for $500 million, and for the farmers to tie into the CAP system, the plan 6, which was the alternative to Orme Dam, we saved a lot of things, but we didn't save money on that, because the cost was $736 million. Congressman Udall is going to get a larger aqueduct to Phoenix and Tucson, no doubt in anticipation of future Central Arizona projects.

Arizona is expensive and they spend money like water around here, but it's not their money. It's everybody's money. It's Alaska's money; New York's money; North Carolina's money. It's money—I don't like the water policies we have. I don't like the way they're thinking that it's a bottomless pit when it comes to water in Arizona. It seems to me they're asking you to sign a blank check, signed by John Q. Public, but one of the things if the Federal Government does involve itself with investing money in these two dams or any dams that we have

here that are run by the Salt River project, and the big thing was made today that these dams are under the name of the Federal Government, but, believe me, the Salt River project runs them. They run them with an iron hand. There are communities that would love to have water, and Salt River sells their water so cheap that they waste it. It's a scandal, but they refuse to share their water outside their boundaries, so if the Federal Government invests money in SRP, extract something from the Salt River project, so now's the time for dealing, so let's deal. Let's deal in the interests of everybody, not just a few.

And another thing that has to be settled is the—and I have not heard anything on it today—is that if we increase the height of the Roosevelt Dam by 50 feet, who is going to own that additional water? Is it going to belong to the Salt River project so they can increase their revenues by using their cheap prices to further promote the waste of water? It's just another poor water management policy that I don't agree with, so those are the comments that I have. I apologize for my disjointed testimony.

Senator MURKOWSKI. We appreciate your testimony, Ms. Butler.

I want to assure you that the purpose of this hearing is not to set up anybody for the issuance of a blank check, but to get the opinions and recommendations of people like you and others that are close to and associated with the realities of this project in the greater Phoenix area.

Are there any questions that you might have?

Terry?

Mr. EMERSON. No questions. I would just make a comment that I think it's beyond any question that the destruction of commercial property, public buildings, including State buildings as well as Federal buildings, and ruining transportation routes and blocking transportation routes caused by this potential massive flood throughout the area would seriously damage the economy, the well-being, and inconvenience not only the individuals who happen to physically reside within the floodplain, but who are situated in the adjacent metropolitan area. That's my only comment.

Senator MURKOWSKI. Thank you.

Anybody else?

Ms. BUTLER. I would just like to add that in Arizona there was an article in the paper not too long ago that we have 29 other unsafe dams within the State of Arizona. I would like to suggest to those communities where there's 29 unsafe dams that if the Federal Government reinforces Stewart Mountain Dam and Roosevelt Dam, that they pass title of those 29 unsafe dams to the Federal Government so that the Federal Government can also patch them up, and Senator Murkowski, I would like to congratulate you on the intelligent questions you've asked. It's a pleasure to see somebody from our Government asking some good questions instead of just being a rubber stamp.

Senator MURKOWSKI. Thank you very much. I appreciate your comments.

Are there any people in the audience that would like to testify as this time?

We have a candidate.

Would you please sit down and introduce yourself.

You may proceed.

STATEMENT OF SCOTT BURGE, MARICOPA AUDOBON SOCIETY

Mr. BURGE. My name is Scott Burge, and I'll make it brief.

I did not find out about the hearing, and I have been very active for about 10 years in this issue, but I think it was just an oversight on the part of Senator DeConcini's office, who I've had a very good relationship with, and I would like to say one thing.

I thank you, Mr. Senator, for coming here and asking some of the best questions I've heard of any Senator or Congressman to visit our area, and also I'd like to say that I hope you pursue this in Washington.

Senator MURKOWSKI. Obviously, with that kind of a compliment I'm not going to ask any more questions.

If there are no further witnesses, the hearing record will remain open for 10 days or 2 weeks. Which is it? For 2 weeks.

We thank all of you who were here, and I think it was significant, particularly, that the Governor was here, that the mayor of Phoenix was here. I think they've highlighted the concern of the entire community's place on this matter, and I can assure you that I will share your input with my colleagues, particularly Senator DeConcini and Senator Goldwater. Thank you for that input and for your most gracious hospitality that has been extended to us, and I will also share with my colleagues on the Subcommittee on Water and Power of the Committee on Energy and Natural Resources their particular recommendations and comments, and I want to thank those who testified for making an outstanding record.

And, Mr. Brown, we anticipate, hopefully, something in Washington when?

Mr. BROWN. Late April, sir.

Senator MURKOWSKI. He says late April, so don't hold me to it. Hold him to it, but I think in reality we can probably be doing something in early May.

With that the hearing is adjourned.

[Whereupon, at 11:15 a.m., the hearing was adjourned.]

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